

Women and Heart Disease

**An Atlas of Racial and Ethnic
Disparities in Mortality
Second Edition**

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A Message from the Director of the Centers for Disease Control and Prevention

As the Nation's Prevention Agency, the Centers for Disease Control and Prevention (CDC) is committed to reducing the burden of heart disease – the leading cause of death and a major contributor to disability in the United States. Deaths from heart disease are largely preventable, and with targeted public health efforts we can alleviate much of the heavy burden of this disease. To meet this challenge, CDC works to closely monitor geographic and temporal trends in heart disease among racial and ethnic groups, strengthen the delivery of primary and secondary preventive health services to all such groups, and implement policy changes that support heart-healthy environments for all residents of the United States. CDC's Associate Director for Women's Health and Associate Director for Minority Health serve as the Agency's focal points for coordinating activities and monitoring programs to meet these objectives.

Among women, mortality rates for heart disease are higher than the rates for all forms of cancer combined. Approximately 373,286 women die of heart disease each year, and more than 6.5 million women alive today have suffered a heart attack or angina pectoris (chest pain). In addition, the burden of heart disease among women is not equally distributed among racial and ethnic groups within the United States. *Women and Heart Disease* comprehensively describes the unequal distribution of heart disease among these groups.

Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality provides health professionals and concerned citizens at the local, State, and national levels with information essential to identifying populations of women at greatest risk of heart disease and in greatest need of prevention efforts. For the first time, county-level maps of heart disease are presented for women of the five largest racial and ethnic groups in the United States – American Indians and Alaska Natives, Asians and Pacific Islanders, Blacks, Hispanics, and Whites. In addition, *Women and Heart Disease* includes maps that depict geographic patterns of local economic and medical care resources, data on the social isolation of women, and population distributions for each racial and ethnic group. These maps provide crucial information for tailoring prevention efforts to the communities in need.

This publication is the first in a series of atlases related to cardiovascular disease that are in progress through a collaboration between CDC and West Virginia University. The next publication will be *Men and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality*.

I am pleased to share this important publication with you. I encourage you to use these data to improve the delivery of preventive health services and to create heart-healthy environments for all women.



Jeffrey P. Koplan, M.D., M.P.H.
Director, Centers for Disease Control and Prevention

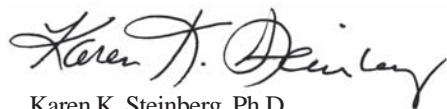
A Message from the Associate Director for Women's Health and the Associate Director for Minority Health of the Centers for Disease Control and Prevention

There is an increasing awareness of the health needs of women and minority populations in the United States. Historically, both groups have had limited access to health care resources and have been omitted from many research studies. Government and non-government health agencies are beginning to identify the gaps in health care and health outcomes that exist among these groups and are beginning to develop strategies to reduce these gaps. Since the inception of the Centers for Disease Control and Prevention's (CDC) Office of Minority Health in 1988 and Office of Women's Health in 1994, our Offices have been committed to improving the health status of women and of racial and ethnic minority populations throughout the United States.

CDC's Office of Women's Health is preparing to address the projected demographic trends of the next century and to meet the current and anticipated needs of millions of underserved women in America. By the year 2030, one of every four women will be over the age of 65, and by the year 2050 women of color will represent one-half of the adult female population. These trends toward the aging and diversification of American women highlight the need to establish health promotion policies and programs that are culturally relevant and address issues surrounding chronic diseases that an aging population will experience – particularly heart disease, the leading cause of death among women in the United States. The data presented in *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality*, provides for the first time, vital information needed to locate communities of women at greatest risk of heart disease for each racial and ethnic group. The county-level maps of heart disease and social environmental conditions provide the basis for taking actions now that could lead to substantially lower rates of heart disease among all U.S. women in the future.

A central focus of activities of CDC's Office of Minority Health is implementation of the President's *Initiative to Eliminate Racial and Ethnic Disparities in Health*. Cardiovascular disease is one of the six health status areas targeted for eliminating such disparities by the year 2010. We recognize that achieving this goal requires a major national commitment to identify and address the underlying causes of the racial and ethnic disparities. New insights are needed to understand the determinants of the racial and ethnic disparities in cardiovascular disease and to apply our knowledge toward eliminating these gaps. In this regard, you will find *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality* to be a timely publication that provides a new perspective on the racial and ethnic patterns of cardiovascular disease at the community level. The maps will enable health researchers to develop new hypotheses regarding the determinants of the geographic patterns of heart disease for each racial and ethnic group, and will also enable health professionals in local, State, and national health agencies to design new programs and policies tailored to the needs of the communities with the highest rates of heart disease mortality.

As we continue to identify the health needs of women and minority populations, additional opportunities will arise to expand and modify our public health and medical care strategies for preventing and treating heart disease among all women.



Karen K. Steinberg, Ph.D.

Acting Associate Director for Women's Health



Walter W. Williams, M.D., M.P.H.

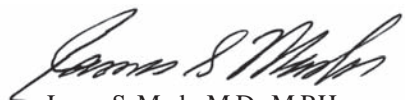
Associate Director for Minority Health

I am pleased to present *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality*. For too long, heart disease has been considered as primarily a “man’s disease”; however, heart disease is also the number one killer of women. In terms of total deaths, heart disease claims the lives of more women than men. The gap between women and men is growing as the number of excess deaths from heart disease among women continues to increase over time.

This landmark document supports the President’s *Initiative to Eliminate Racial and Ethnic Disparities in Health* and addresses the important need to reduce the risk of heart disease among women of all racial and ethnic groups. The maps in *Women and Heart Disease* depict heart disease mortality rates among women, county-by-county, for the entire United States, and identify the places where women of each of the five major racial and ethnic groups experience the highest rates of mortality from heart disease. With this information, public health professionals at the local, state, and national levels will be able to target prevention resources to populations of women in greatest need of additional services.

Although mortality from heart disease has been declining for several decades, the rate of decline has varied by racial and ethnic group, resulting at times in a widening of the gap between such groups for both women and men. Moreover, recent trends indicate a slowing down in the rate of decline of heart disease mortality and underscore the importance of enhancing our efforts to support innovative community-based strategies for reducing the risk of heart disease. For women of all racial and ethnic groups (as well as for men) it is through prevention that we can expect to achieve the greatest cardiovascular health benefits. *Women and Heart Disease* indicates where those programs are most needed and can have the greatest benefit.

It is my hope that *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality* will be used to guide the distribution of funds and resources to those communities of women experiencing excess mortality from heart disease and will promote the development of culturally sensitive prevention strategies.



James S. Marks M.D., M.P.H.
Director, National Center for Chronic Disease Prevention and
Health Promotion, Centers for Disease Control and Prevention

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Introduction

Maps have historically played a crucial role in the identification and resolution of public health problems, beginning with John Snow's maps of the nineteenth century cholera epidemic in London. During the past 40 years, public health researchers have documented persistent geographic disparities in heart disease mortality in the United States. However, most of these studies have reported findings only for men. While there is growing awareness that heart disease is the leading cause of death for women, claiming over 372,000 lives in 1995 alone, few studies of heart disease in women have examined geographic disparities.

Why is it critical to understand local geographic disparities in the burden of heart disease among women? We contend that health disparities among places reflect underlying inequalities in local social environments that make some communities more health-promoting than others. The social environment provides the context within which individuals are exposed to

structural risk factors (e.g. lack of economic opportunity, poverty, and social isolation) that contribute to the adoption of disadvantageous behaviors (e.g. cigarette smoking, physical inactivity, poor diet). Ameliorating the social environment in local communities will require structural and institutional changes, improvements in community social relations, and reductions in inequalities within those communities. Identifying the places that bear the greatest burden of heart disease mortality is a necessary first step to targeting appropriate resources to improving the local social environment and health outcomes in those communities.

In *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality*, we have produced an extensive series of national and state maps that present local variation in heart disease death rates for all women, American Indian and Alaska Native women, Asian and Pacific Islander women, black women, Hispanic women, and white women for the period

1991-1995. These maps highlight both substantial racial and ethnic disparities in heart disease and the marked geographic disparities in the burden of heart disease that exist within each race and ethnicity group. In addition, we have included national maps of local indicators of the social environment. These indicators include the geographic distribution of population by race and ethnicity, availability of local economic resources, social isolation of elderly women, and the availability of medical care resources.

An important strength of *Women and Heart Disease* is our examination of geographic disparities in heart disease mortality for American Indian and Alaska Native women, Asian and Pacific Islander women, and Hispanic women. Previous reports have focused predominantly on reporting data for blacks and whites. While there are important data quality limitations for race and ethnic groups other than whites and blacks, we chose to present results for women of all race and ethnicity groups. We hope

that these results will both highlight the need for improved death certificate and population data quality, and provide useful information to public health agencies and advocacy groups who are working to improve health outcomes in diverse populations.

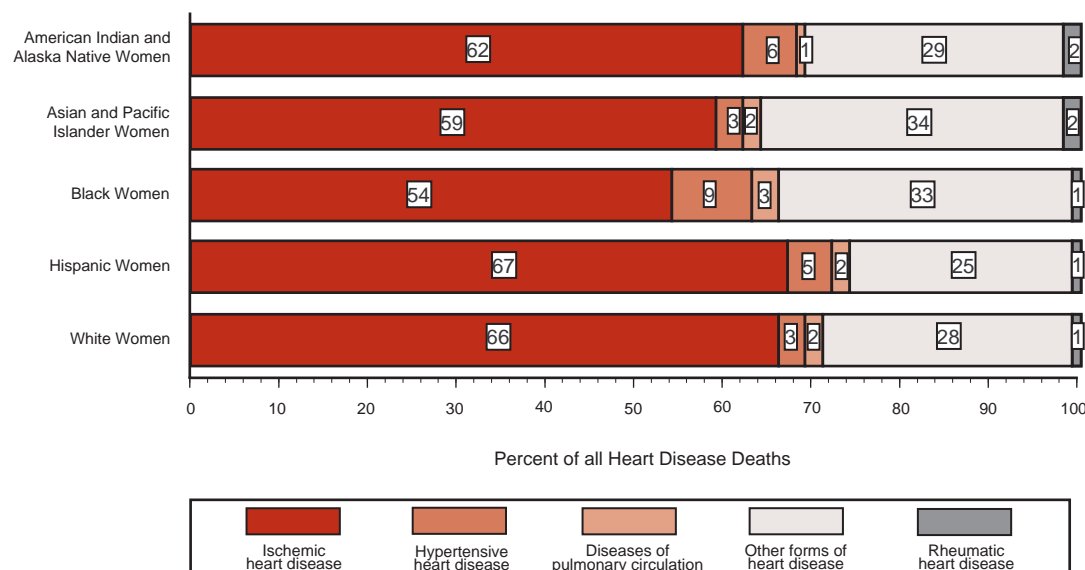
Two perspectives on geographic disparities in heart disease among women are presented in *Women and Heart Disease*: a national perspective and a state perspective. The national perspective allows the comparison of heart disease death rates for all localities in the United States, visible on national maps that present county death rates separately for each race and ethnicity group. In contrast, the state perspective allows the comparison of heart disease death rates for all localities within a single state. *Women and Heart Disease* includes over 200 state maps, with at least two maps (for all women and white women) and up to six maps presented for each state. The national and state perspectives provide complementary information useful for targeting resources to high risk communities.

1 Racial and Ethnic Disparities in Heart Disease among Women

Racial and Ethnic Disparities in Heart Disease among Women

In February 1998, at the direction of the President, the Department of Health and Human Services launched the *Initiative to Eliminate Racial and Ethnic Disparities in Health*. One of the goals of this initiative is to eliminate disparities in cardiovascular disease by the year 2010. Efforts to meet this goal must include the analysis and presentation of accurate and timely data on the current burden of cardiovascular disease among racial and ethnic minorities in the United States. This publication is part of that effort. We examined geographic disparities in heart disease mortality for American Indian and Alaska Native women, Asian and Pacific Islander women, black women, Hispanic women, and white women. These race and ethnicity categories have been officially adopted by the federal Office of Management and Budget (see Appendix B). Under the federal data reporting scheme, Hispanic is considered a designation of ethnicity, not race. Therefore, data for Hispanic women were included within each of the four racial categories, and also analyzed separately. We use the terms “black” and “African American” interchangeably throughout this publication; similarly, “Latina” and “Hispanic” were used interchangeably as well.

Figure 1.1
Specific categories of heart disease deaths among women 35 years of age and older, by race and ethnicity, 1991-1995



The Social Construction of Race

Following several experts in human evolution,^{1,2} we recognize *race* and *ethnicity* as valid scientific categories, but *not* as valid biological or genetic categories. The health sciences include both biological and social sciences, and from a social science perspective race and ethnicity categories reflect the reality of socially distinct groups in the United States. Ethnic groups typically share certain cultural, linguistic, and other characteristics, and are often multiracial. Contemporary race divisions are the result of historical events, in particular the often hostile encounters (e.g. wars and colonizations) between population groups that were formerly geographically isolated. Differences in physical appearance between population groups that were politically in conflict acquired inflated social significance, compared with differences in physical appearance among individuals of the same group.

The idea that geographically-defined human social groups, such as “Africans” or “Japanese,” were actually biologically and genetically distinct human “races” or “subspecies” gained popular credence in the nineteenth and early twentieth centuries.³ Most of the scientific evidence generated during those times to support theories of biologically distinct human races has since been discredited and disavowed by many scientists.³⁻⁵ These scientists have demonstrated that the significance attributed to these physical characteristics is wholly social and historical in origin, and does not reflect biologically or genetically important differences among people.¹ However, there is still popular belief in the idea that the superficial differences in physical appearance among people of various racial and ethnic groups must be linked to more profound and significant genetic differences in behavior, intelligence, and susceptibility to disease.

Empirical evidence from population biology demonstrates why the theory of genetically distinct races is incorrect. First, all human beings share the same genes. This is what defines us as a species. Each person has two copies of essentially all genes, because our chromosomes come in pairs – one inherited from our mother, and one inherited from our father. Slight variations

in the form, and sometimes the function, of individual genes do exist in human populations. These gene variations are called *alleles*. However, 75% of all human genes are monomorphic, meaning that only one allele exists in all people.¹ Only a very small fraction of all human alleles impact severely on gene function in a way that leads to disease. Most importantly, there are no particular alleles (whether detrimental, beneficial, or neutral) that can be found to exist only in one racial or ethnic population and not in others. For example, the allele of the hemoglobin gene that leads to sickle cell disease, typically thought to be solely found in Africans, is also found in some Asian populations.

In summary, the five racial and ethnic groups described in *Women and Heart Disease* are socially, but not biologically, distinct groups. Moreover, we recognize that each of these broad racial and ethnic groups includes people of tremendous diversity with regard to culture, socioeconomic status, heritage, and area of residence. If we accept the idea that different racial and ethnic groups do not vary systematically in their inherent genetic susceptibility to disease, then to what can we attribute racial and ethnic disparities in heart disease mortality? Current research suggests a number of possibilities, including differences in social class, culture, behavioral risk factors, psychosocial risk factors, and the direct effects of racism, segregation, and discrimination.⁶

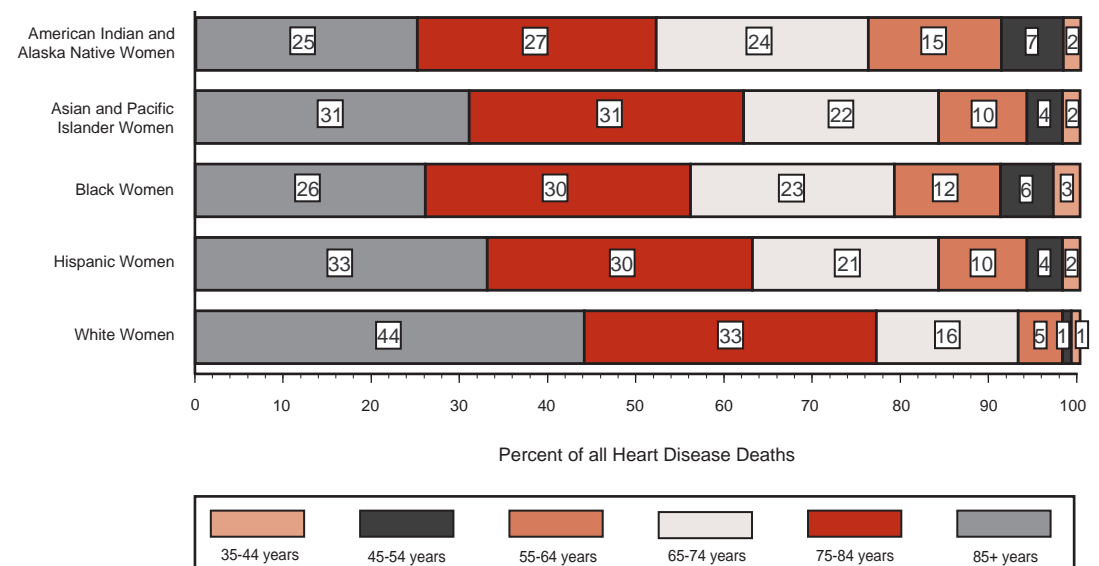
Misreporting of Race and Ethnicity on Death Certificates

An important concern for examining racial and ethnic disparities in heart disease mortality is the accuracy of race and ethnicity information reported on the death certificate. Separate entries are available for race (American Indian or Alaska Native, Asian or Pacific Islander, black, and white) and Hispanic origin (yes or no). Unfortunately there is evidence from several studies that race and ethnicity are not always reported accurately on death certificates. There are instances when American Indians and Alaska Natives along with Asian and Pacific Islanders are mistakenly identified as white, and His-

panics are mistakenly reported as non-Hispanics. This misreporting results in artificially lower mortality rates for those racial and ethnic groups. It is uncommon for race to be misreported for blacks. Misreporting of race and ethnicity on death certificates does not significantly increase mortality rates for whites, because the number of decedents who are misidentified as white on their death certificates is small relative to the very large white population.

One study⁷ compared race and ethnicity information from the Current Population Survey with similar data on death certificates for 43,000 individuals who died during 1979 to 1985. The study found that race was coded incorrectly on the death certificate for 0.8% of whites, 1.8% of blacks, 17.6% of Asian and Pacific Islanders, and 26.6% of American Indians. Hispanic ethnicity was miscoded on the death certificate for 10.3% of individuals who self-identified as Hispanic on the survey, with the greatest errors for persons who identified themselves as Cuban or "other Hispanic." A similar study found high rates of

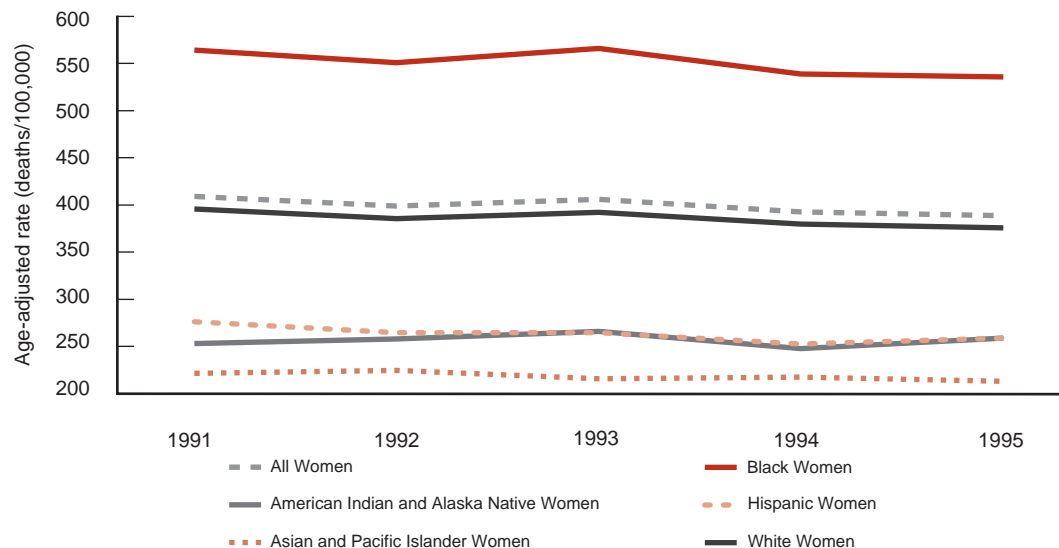
Figure 1.2
Age distribution of heart disease deaths among women 35 years of age and older, by race and ethnicity, 1991-1995



disagreement between AIDS case reports and death certificates for American Indians (46%), Asians and Pacific Islanders (12%), and Hispanics (14%).⁸ A study of infant mortality in California found significant underestimation of rates for American Indians and Asians.⁹ Correct reporting of American Indian origin on death certificates was found to be associated with tribal affiliation and percentage of American Indian ancestry in a study that linked IHS records and death certificates in Washington State.¹⁰

A recent report from the national Center for Health Statistics estimates that death rates (for all causes of death combined) corrected for both misreporting of race and ethnicity on the death certificates, and population undercounts in census files, would be 21% higher than currently reported for American Indians and Alaska Natives, 11% higher for Asians and Pacific Islanders, and 2% higher for Hispanics.¹¹ No studies to date have evaluated the extent of geographic variation in the accuracy of reporting race and ethnicity on the death certificate and in the degree of population undercounts.

Figure 1.3
Trends in heart disease mortality among women 35 years of age and older, by race and ethnicity, 1991-1995



Specific Categories of Heart Disease Deaths Among Women

The definition of heart disease used in this study was the category “diseases of the heart” as defined by the National Center for Health Statistics (see Appendix B for details). This definition encompasses a variety of forms of heart disease including rheumatic heart disease (a consequence of untreated streptococcal infection that can cause permanent damage to the heart valves over time), diseases of pulmonary circulation, hypertensive disease, ischemic heart disease (narrowing of the coronary arteries which decreases the supply of blood to the heart), and other forms of heart disease (including pericarditis, myocarditis, mitral valve disorders, cardiomyopathy, and heart failure).

For women of all racial and ethnic groups, ischemic heart disease was the primary specific category of death from diseases of the heart (Figure 1.1). Among all women aged 35 years and older, 64% of heart disease deaths were attributed to ischemic heart disease. The contribution varied somewhat according to race and ethnicity, with the largest percentage (67%) occurring among Latina women and the smallest percentage (54%) occurring among African American women. The proportion of heart disease deaths from hypertensive disease also varied notably according to race and ethnicity. Among black women, 9% of heart disease deaths were a consequence of hypertensive heart disease, compared with only 3% of heart disease deaths for white women and Asian and Pacific Islander women.

Age Distribution of Heart Disease Deaths Among Women

Heart disease mortality increases dramatically with age, with elderly women (85 years and older) at highest risk of death. Heart disease deaths that occur before the age of 65 are generally considered premature, preventable deaths, and are therefore of particular public health significance. During 1991-1995, the proportion of heart disease deaths that occurred prematurely among women varied considerably by race and ethnicity (Figure 1.2). The least favorable age distributions of heart disease deaths were experienced by American Indian and Alaska

Native women (23.4% of deaths were premature) and black women (21.7% of deaths were premature). In contrast, only 7.7% of heart disease deaths among white women occurred prematurely. White women also experienced the highest proportion of heart disease deaths after age 75 years (76.7%).

Heart Disease Death Rate Trends for 1991-1995

Disparities in the level of heart disease mortality among the five race and ethnicity groups of women were observed for the years 1991-1995 (Figure 1.3). The highest rates occurred among African American women, followed by white women, American Indian and Alaska Native women, and Asian and Pacific Islander women. The heart disease death rates for Hispanic women of all races were similar to the rates for American Indian and Alaska Native women. Throughout the time period, there was a more than twofold difference between the lowest rates (Asian and Pacific Islander women) and the highest rates (black women). The low heart disease death rates nationwide for Asian and Pacific Islander women are predominantly a reflection of the mortality experience of Asian women. A study of heart disease mortality in Hawaii found that rates for Hawaiian and other Pacific Islander women were two to six times higher than the death rates for Chinese, Philipino, and Japanese women.¹²

In 1995, the heart disease death rates among black women were 2.6 times higher than the rates for Asian and Pacific Islander women, 2.1 times higher than the rates for Latina women as well as American Indian and Alaska Native women, and 1.4 times higher than the rates for white women. However, as discussed above, misreporting of race and ethnicity on the death certificate may have led to spuriously lower heart disease death rates for American Indians and Alaska Natives and Asians and Pacific Islanders, compared with African Americans and whites.

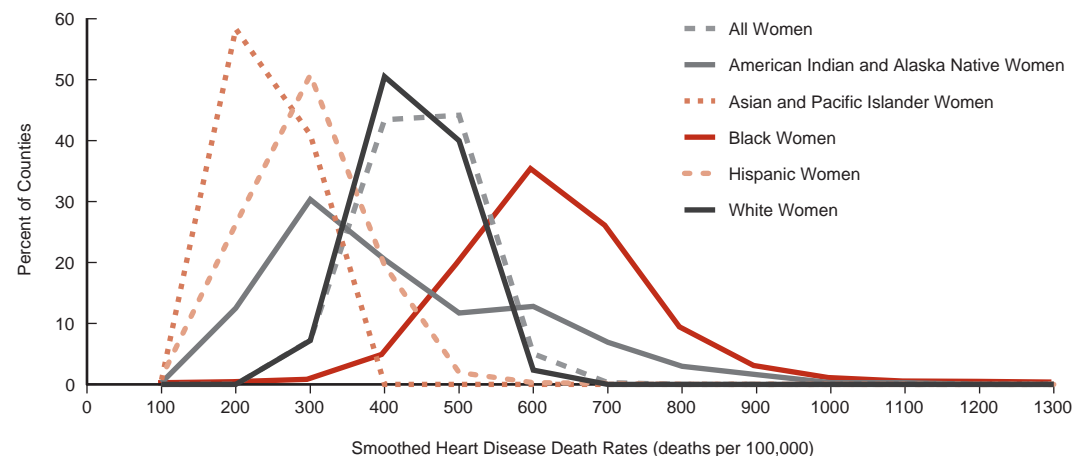
Although the 1970s and 1980s were times of substantial declines in heart disease death rates among women, the rate of decline slowed substantially in the 1990s. The trend data pre-

sented here indicate that among women of each race and ethnicity group there was very little decline in heart disease death rates in the 1990s. On average, heart disease death rates dropped 1.25% per year for women of all racial and ethnic groups combined. (The average annual percent change in death rate was calculated by subtracting the 1991 rate from the 1995 rate, dividing by the 1991 rate, and then dividing by 4). Hispanic women and Asian and Pacific Islander women experienced slightly faster declines (1.53% and 1.46% per year, respectively) than black women (1.25% per year) and white women (1.24% per year). American Indian and Alaska Native women experienced negligible declines in heart disease mortality from 1991 to 1995 (0.54% per year).

County Variation in Heart Disease Death Rates

Considerable variation in heart disease death rates for women across counties was evident for 1991-1995 (Figure 1.4). The

*Figure 1.4
Frequency distribution of
smoothed county heart
disease death rates for
women 35 years of age
and older, by race and
ethnicity, 1991-1995*



county distributions highlight the disparities in the burden of heart disease among women of different races and ethnicities. By focusing on the tails of the distributions it is evident that there was very little overlap in the county rates for Asian and Pacific Islander women and the rates for African American women. In other words, the highest county heart disease death rates for Asian and Pacific Islander women were lower than almost all of the county rates for black women. For white women, the high end of the tail of the distribution was about midpoint in the distribution of county rates for African American women.

The peaks in the distribution graphs for each racial and ethnic group indicate the most common county heart disease death

rates for that group. The peak occurs at a much higher level for blacks than for any other group. Among Asian and Pacific Islander women, the most common heart disease death rate for counties is lower than for any of the other groups. The distribution of county heart disease death rates for American Indian and Alaska Native women is much broader than for other groups of women, with a primary peak around 300 deaths per 100,000 women and a secondary peak around 600 deaths per 100,000 women. The bimodal distribution of county heart disease rates highlights the geographic variation in the burden of heart disease across the populations of the numerous Tribal Nations that were combined into one category for the purposes of data analysis.

¹ Lewontin R. *Human Diversity*. New York: Scientific American Books, 1995.

² Gould SJ. *The Mismeasure of Man*. New York: W.W. Norton and Company, 1981.

³ Smedley A. *Race in North America: Origin and Evolution of a Worldview*. Boulder, CO: Westview Press, 1993.

⁴ Freeman HP. The meaning of race in science – considerations for cancer research. *Cancer* 1998; 82(1):219-225.

⁵ Cooper R. A note on the biologic concept of race and its application in epidemiologic research. *American Heart Journal* 1984; 108:715-723.

⁶ Williams DR, Collins C. U.S. socioeconomic and racial differences in health: patterns and explanations. *Annual Review of Sociology* 1995; 21:349-386.

⁷ Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. *Epidemiology* 1992; 3(2):181-184.

⁸ Kelly JJ, Chu SY, Diaz T, Leary LS, Buehler JW. Race/ethnicity misclassification of persons reported with AIDS: the AIDS mortality project groups and the supplement to HIV/AIDS surveillance project group. *Ethnicity and Health* 1996; 1(1):87-94.

⁹ Farley DO, Richards T, Bell RM. Effects of reporting methods on infant mortality rate estimates for racial and ethnic subgroups. *Journal of Health Care for the Poor and Underserved* 1995; 6(1):60-75.

¹⁰ Frost F, Tollestrup K, Ross A, Sabotta E, Kimball E. Correctness of racial coding of American Indians and Alaska Natives on the Washington state death certificate. *American Journal of Preventive Medicine* 1994; 10(5):290-294.

¹¹ Rosenberg HM, Maurer JD, Sorlie ED, Johnson NJ, et al. Quality of death rates by race and Hispanic origin: a summary of current research. *Vital and Health Statistics Reports*. Rockville MD: National Center for Health Statistics (in press).

¹² Braun KL, Yang H, Onaka AT, Horiuchi BY. Asian and Pacific Islander mortality, differences in Hawaii. *Social Biology* 1997; 44(3-4):213-26.

2 Reader's Guide to Understanding and Interpreting the Maps

Maps have the potential to convey large amounts of complex information in an efficient and visually appealing format. Several important elements are necessary for creating a well-designed and accurate map, including the *subject matter* or content of the map (in this case, heart disease death rates), the *layout* of the map (i.e., the location and meaning of different items on the page), the *projection* of the map (i.e., the method by which the earth's curved surface is translated onto a flat page), and the *scale* of the map (i.e., the size of features on the map relative to their actual size on the earth). This section describes each element, and provides additional information useful for interpreting and using the maps.

We have designed the maps in *Women and Heart Disease* to provide the reader with easy access to important information on the geographic distribution of heart disease mortality among women of diverse races and ethnicities. One of the attractions of maps is that they enable communication of huge amounts of information. Precisely because so much information is being presented, however, it is important to be aware of the strengths and limitations of map display.

Women and Heart Disease includes heart disease death rate maps for the nation as a whole and for each individual state. Our rationale for including both national and state maps was straightforward. The national maps illustrate the broadscale geographic patterns of heart disease mortality for each race and ethnicity group, and enable the reader to compare any region, state, or county with other parts of the country. The state maps allow the reader to identify the high-rate and low-rate areas within each state for all of the race and ethnicity groups.

For each state, the categories for high- and low-rate areas are based only on the county rates for that state. Consequently, the spatial pattern of heart disease death rates for a particular state on the national map will look different than the spatial pattern shown on the state map. With care, it is possible to contrast mortality patterns and rates among states and among the different race and ethnicity groups.

Calculation of Heart Disease Death Rates

Our study population consisted of women aged 35 years and older who resided in the United States during 1991-1995. County maps of heart disease mortality were created for six groups of women: all women, American Indian and Alaska Native women, Asian and Pacific Islander women, black women, Hispanic women, and white women. We calculated heart disease death rates at the county level for each group of women using death certificate data from the National Vital Statistics System and population data collected by the Bureau of the Census. We defined a *heart disease death* as any death for which the underlying cause of death recorded on the death certificate fell into the category "diseases of the heart," as defined by the National Center for Health Statistics. This category included deaths coded 390-398, 402, 404-429 under the Ninth Revision of the International Classification of Diseases (see Appendix B for details).

Important methodological issues had to be resolved before we could map geographic patterns of heart disease mortality for women. Analyses at the county level provide a high degree of spatial specificity but are also subject to potential statistical biases. Specifically, for counties with sparse populations and small numbers of heart disease deaths, the estimated death rates were likely to have large variances which could result in many counties having estimated rates that were either spuriously high or low. The issue of small populations was particularly relevant for examining patterns of heart disease mortality by race and ethnicity, since racial and ethnic populations tend to be concentrated in certain geographic regions and sparse in other regions. For all races and ethnicities, populations are more sparse in rural than urban counties.

Given the assumption that, in general, mortality rates are subject to some random variation,¹ counties with small populations are more likely to exhibit rates that fluctuate considerably from the true, unknown rates. This fluctuation can result in misrepresentations of the true geographic patterns.² We employed two approaches to reduce the statistical variability of the county mortality rates for heart disease: 1) temporal aggregation of the data

for the five year period 1991-1995, and 2) application of a statistical procedure known as *spatial smoothing*.

Spatial smoothing involves calculating spatial moving averages for all counties.² Heart disease deaths (numerators) and population counts (person-year denominators) for each county were summed together with the deaths and populations of the immediate neighboring counties (i.e. contiguous counties) and then divided to produce an average rate. Stated another way, the rate shown on the map for a single county represents an average of the heart disease mortality experience of that county and all its contiguous neighbors (see Appendix B for complete details).

All rates were age-adjusted using the 1970 United States population as the standard, and are presented as deaths per 100,000 population. On each map, counties were grouped into five categories of approximately equal number (quintiles) based on the county distribution of smoothed heart disease death rates. Counties were first ranked from lowest to highest based on heart disease death rates. The lowest 20% of counties were assigned to the first quintile; counties with death rates within the range from 20% to 39% were assigned to the second quintile; from 40% to 59% to the third quintile; from 60% to 79% to the fourth quintile, and the top 20% of counties were assigned to the highest quintile. The use of quintiles for mapping is appropriate for smoothed death rates and helps the reader to avoid over-interpreting the data.

Because the severity of heart disease mortality varied by race and ethnicity, the quintile cutpoints are different for each of the national maps, and the range of values represented by a given quintile varies from map to map. Therefore, comparisons of the spatial patterns of heart disease mortality across the maps should be limited to comparing relative differences among different groups of women. To determine whether the mortality rates were absolutely higher or lower for one race and ethnicity group than for another, the reader must study the relevant legends and compare the cutpoints. It is well worth making a mental note of the range of county heart disease death rates for each group when comparing geographic patterns across maps.

National Heart Disease Mortality Map Layouts

Each national heart disease mortality map follows a standard layout (Figure 2.1). The title in the upper left hand corner identifies the subject. The upper right hand title identifies the race or ethnicity of the women represented in the map. Most of the page is devoted to a map of the continental United States. We followed the common convention of displaying Alaska and Hawaii as insets in the lower left hand corner of the layout. Two cities with very large populations, New York City and the District of Columbia, are very small in area and hence difficult to see on the continental map. Therefore, these two areas are also displayed as insets. County boundaries are displayed with a thin black line, and state boundaries are displayed with a thick black line.

The legend, located beneath the map, indicates the range of county heart disease death rates in each quintile, and the number of counties in each quintile. For example, among black women (see Figure 2.1) the cutpoint for the lowest quintile is 484, indicating that black women in 20% of counties experienced heart disease death rates less than or equal to 484 deaths per 100,000 population. Counties in each quintile are displayed in a different color on the map. Counties in the highest rate quintile are the darkest color, while counties in the lowest rate quintile are the lightest color. Counties for which there was insufficient data to calculate a heart disease death rate are shaded gray.

National Map Projections

Although no flat map can be a perfect representation of the curved surface of the earth, use of a suitable map projection preserves essential characteristics such as relative size, shape, and orientation. For the national heart disease mortality maps, the three map projections we used maximize the visibility of spatial information. For the contiguous 48 states, we chose Albers Equal Area, a map projection that preserves the accurate presentation of relative area and thus enhances comparison of one county with another. Alaska was projected on

Miller's Cylindrical projection to provide a suitable orientation on the layout. Hawaii was presented using geographic coordinates (latitude and longitude), for reasons of shape and orientation. New York City and the District of Columbia were also presented using geographic coordinates.

Scale of the National Maps

Scale is the number of distance units on the earth represented by one distance unit on a map. Scale is a dimensionless ratio and can therefore be expressed in any set of distance units (e.g. miles, kilometers, inches, centimeters). Every national map of heart disease mortality actually contains five separate maps, each displayed at a different scale. To display the entire United States on one page, we had to compromise by displaying

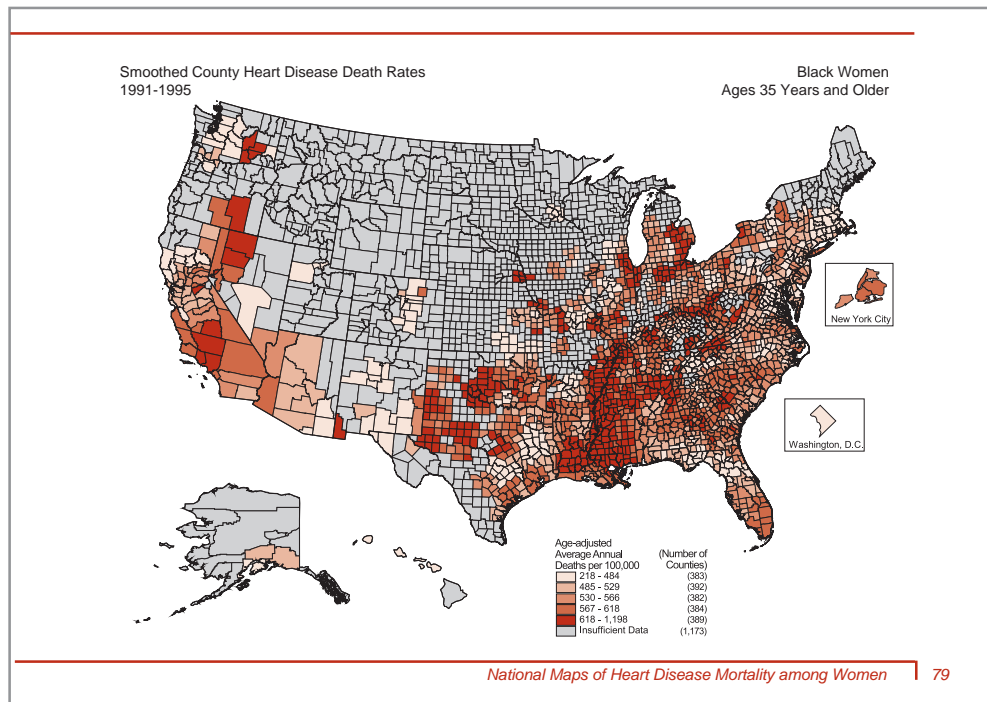
Alaska and Hawaii as insets. Alaska is displayed at a smaller scale than the map of the contiguous 48 states, because it is large in land area. Hawaii, New York City, and the District of Columbia are displayed at larger scales than the contiguous 48 states because these areas are relatively smaller in land area. Since these maps are thematic in nature and were not designed for displaying or measuring distances, we have chosen not to provide the exact linear scale for each map.

Guide to National Maps of Local Social Environment

An emerging body of research has recently emphasized the importance of the social environment in influencing population patterns of heart disease mortality. Local social environments provide the context within which individuals live and work, and can create both barriers and incentives to the maintenance of healthy homes, work environments, social networks, and individual lifestyles.^{3,4,5} We created several maps that represent four dimensions of the social environment relevant to geographic patterns in heart disease mortality.

The first dimension was *population distribution*. In a series of five maps, the residential location of women aged 35 years and older during 1991-1995 was portrayed separately for each race and ethnicity group. The second dimension was *local economic resources*. Using data on median family income, occupational structure, and unemployment rates for counties, an index of local economic resources was created and mapped. The third dimension of the social environment we examined was *social isolation of elderly women*. We mapped two indicators of women's social isolation for women aged 60 years and older: prevalence of living alone and prevalence of mobility or self-care limitations. Finally, the fourth dimension was *medical care resources*. Maps of county distributions of cardiovascular specialty physicians, coronary care unit beds, and cardiac rehabilitation units were produced. Detailed information on data sources and indicator definitions can be found in Appendix B.

Figure 2.1
Example of layout for national heart disease mortality maps



Evaluation of the maps of the social environment in conjunction with the heart disease mortality maps may suggest hypotheses about the determinants of geographic disparities in heart disease death rates among women. These maps also provide important information useful for developing programs and policies to reduce the burden of heart disease among women.

National Population Distribution Map Layouts

One set of maps in this section, the population distribution maps, display two indicators on the same map and use a legend that may be unfamiliar to many readers. In the example shown in Figure 2.2, the first indicator is the percent of all women in each county who were black, and the second indicator is the number of black women in each county. Values of each indicator were divided into three categories. The cutpoints for the categories were chosen to best display the range of variation in population distribution across counties. Consequently, an unequal number of counties fell into each of the three categories for each variable. The categories for the percent of all women who were black were 1) less than 10%, 2) 10%-34%, and 3) greater than or equal to 35%. The categories for the number of black women were 1) fewer than 5000, 2) 5000-49,999, and 3) greater than or equal to 50,000. The same cutpoints were used for the maps of all the race and ethnicity groups.

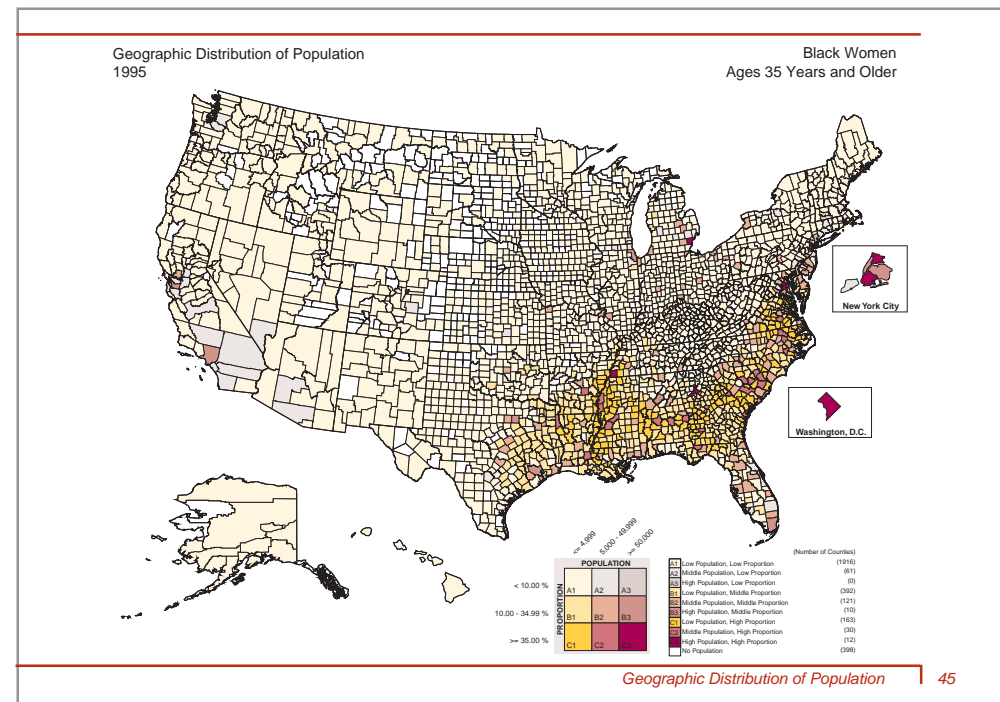
Combining the two indicators resulted in a total of nine categories for mapping which are displayed in a grid format in the legend. There are two color axes on this grid which correspond to the two indicators. Shades of yellow-gray are used for the population number indicator, and shades of yellow-orange are used for the population percent indicator. Categories at the top and left of the grid show low values of the indicators, while categories at the bottom and right of the grid show high values of the indicators. Numbers of counties in each category are also shown in the legend.

Guide to State Maps of Heart Disease Mortality

To create the state heart disease mortality maps, we used the same heart disease death rates that were generated for the national heart disease mortality maps. A description of the methods used to calculate the rates can be found on pages 28-29. It is important to remember that each county rate is based on a spatial moving average of that county and its neighbors. Therefore, for a county in a given state, neighboring counties that are part of adjacent states contributed to the smoothed rate for that county, even though those neighboring counties are not displayed on the state map.

There is one important difference between the national maps and the state maps. The five categories (quintiles) into which all counties are grouped on the national maps were derived

Figure 2.2
Example of layout for
national population
distribution maps



from the range of heart disease death rates experienced by women in counties across the nation. Consequently, all the counties in a particular state could fall into the same quintile and be the same color on a national map. At the state level, we derived quintiles based only on the smoothed heart disease death rates for counties in each state. Therefore, each state has counties that fall into five different quintile categories.

In addition, separate quintile cutpoints were generated for each race and ethnicity group within each state. Our rationale for having separate cutpoints by race and ethnicity was the same as for the national heart disease mortality maps, namely, we wanted to display the full range of geographic variability for each racial or ethnic group of women. Therefore, comparisons of the spatial patterns of heart disease mortality across the maps should be limited to comparisons of the relative differences among different groups of women. In order to determine whether the mortality rates were absolutely higher or lower for one race or ethnicity group compared to another, the reader must study the relevant legends and compare the cutpoints. It is well worth making a mental note of the range of county heart disease death rates for each group when comparing geographic patterns across maps.

State Map Layouts

As with the national maps, for ease of use we have standardized the map layouts at the state level. The page layout for the state maps is presented in Figure 2.3, and uses Arizona as an example. The number of maps produced for each state varies, depending on the number of race and ethnicity groups that had sufficient population sizes to permit mapping of heart disease death rates. The number of maps per state ranges from a minimum of two (maps for all women and maps for white women are displayed for all states) to a maximum of six. States for which there are two or three maps have a single-page layout, and states for which there are four to six maps have a double-page layout.

For single-page layouts, the map title, the first point of reference for the reader, appears at the top right with the state name at top

left. On double-page layouts, the title appears at top right on even numbered pages and top left on odd numbered pages. The state name can also be used as a quick tab index. The label for race and ethnicity appears at top right on all maps. The legend appears at either the bottom right or bottom center on each map. Counties in the highest rate quintile are the darkest color, while counties in the lowest rate quintile are the lightest color. Counties for which there was insufficient data to calculate a heart disease death rate are shaded gray.

For each state, a table is displayed on the bottom left hand side of the first page of the layout. This table includes summary data for the state as a whole. State population counts for 1995 are provided for each of the racial and ethnic groups. Since all Hispanic women were also included in one of the four race categories, the population count for all women represents the sum of the four race groups only. Heart disease death rates for women of each race and ethnicity are presented in this table. For some states, a particular race and ethnicity group may not have a county map displayed but will have an overall heart disease death rate presented in the table. This is not an error but simply reflects the fact that there were not two counties with sufficient data to generate rates (the minimum necessary for a map) but that there were sufficient data for the state as a whole to calculate a rate for that race or ethnicity group.

State Map Projections

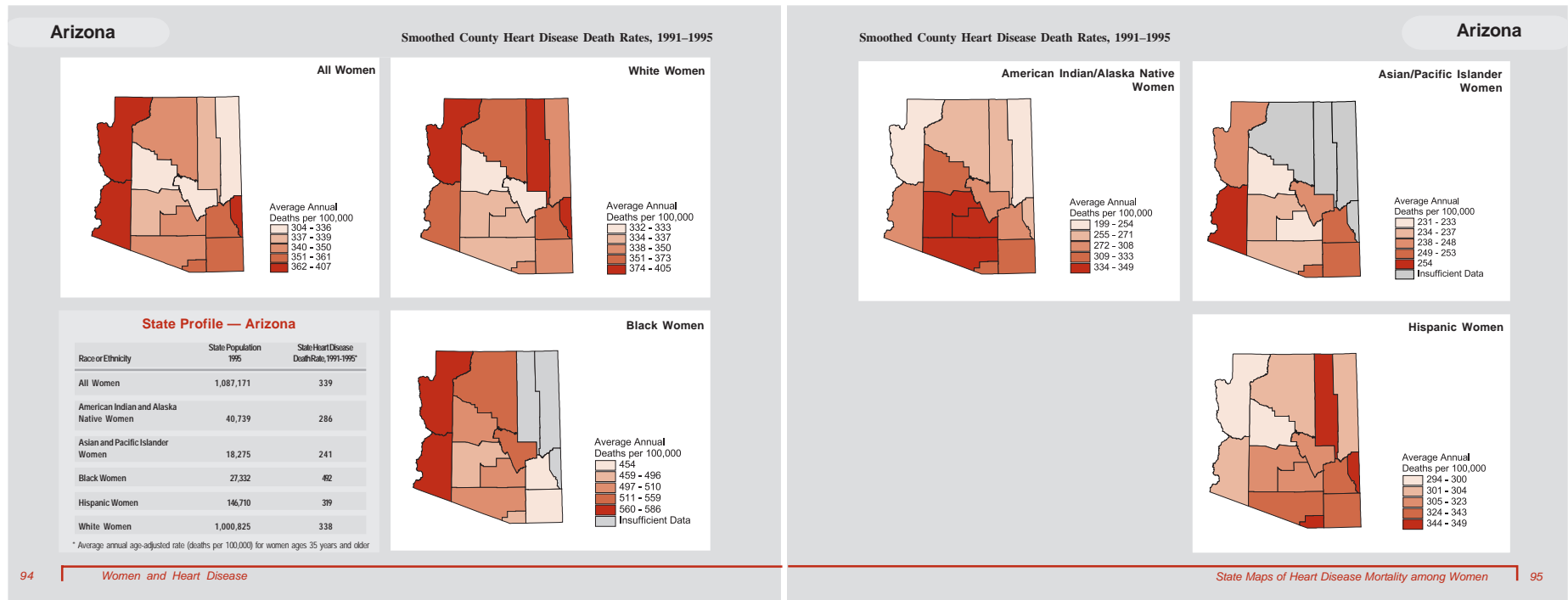
All states were projected using the State Plane system. Every state has a separate, official State Plane system of map projection based on the shape and orientation of the state. Each State Plane system has a standard projection or series of projections based on the Transverse Mercator or Lambert's Conformal projection. In the case of states with multiple State Plane zones, we used the central zone, or the zone that caused minimum distortion to the state as a whole. The benefit of using the State Plane projection is that other geographic information for each state is likely to be available in the same projection, which makes comparison with external data more convenient.

Scale of the State Maps

For each state, the scale is consistent across the maps for different racial and ethnic groups. However, each state is mapped at a different scale compared with other states because we used the largest scale that would fit the layout, in order to maximize the size of the state image. Therefore, states with a small land area were mapped at a larger scale than states with a larger

land area. Comparisons among states should be performed recognizing that, for different states, a unit length on the page will not represent the same distance on the ground. It is useful to use the national map as a point of reference when comparing individual state maps. Because these maps are thematic and were not designed for displaying or measuring distances, we have not provided the exact linear scale for each map.

Figure 2.3
Example of layout for
state heart disease
mortality maps



¹ Chiang CL. Standard error of the age-adjusted death rate. Vital Statistics - Selected Reports. Washington DC: U.S. Government Printing Office 1961: 47(9).

² Cressie N. *Statistics for spatial data*. New York: Wiley, 1991.

³ Armstrong D, Barnett E, Casper M, Wing S. Community occupational structure, medical and economic resources, and coronary mortality among U.S. blacks and whites, 1980-1988. *Annals of Epidemiology* 1998; 8(3):184-191.

⁴ Robert SA. Community-level socioeconomic status effects on adult health. *Journal of Health and Social Behavior* 1998; 39:18-37.

⁵ Wing S, Casper M, Hayes C, Dargent-Molina P, Riggan W, Tyroler HA. Changing association between community occupational structure and ischaemic heart disease mortality in the United States. *Lancet* 1987; 11(7):1067-1070.

3 Local Social Environment and Women's Risk for Heart Disease Mortality

Most contemporary heart disease prevention efforts focus on changing the behavior of individuals regarding lifestyle factors: dietary habits, leisure-time physical activity, and tobacco use.¹ Health promotion programs that focus on behavioral risk factors have been effective among adults who are highly educated, fully employed, and highly motivated to improve their health (i.e. among relatively privileged populations). However, the lifestyle approach to heart disease prevention has serious limitations for people who are at highest risk: namely, rural residents, the working class, and the poor. These groups, unfortunately, have greater exposure to risk factors such as cigarette smoking, physical inactivity, high-fat diets, and psychological stress. These groups also face substantial social, economic, and geographic barriers to risk factor reduction.

A holistic alternative to the lifestyle approach to heart disease prevention focuses on broad improvements in local social environments, recognizing that the social environment provides

the context within which individuals are exposed to structural risk factors (poverty, social isolation, stressful working environments) and adopt detrimental behaviors (cigarette smoking, physical inactivity, poor diets).^{2,3} Under this model, primary prevention of heart disease can be achieved through communitywide improvements in the social environment, including full employment in healthy work environments, access to affordable healthy foods and recreational facilities, freedom from bigotry and discrimination, and opportunities for social interaction and participation in civic life.⁴

In this section of the atlas, we examined several aspects of local social environments that are relevant for primary and secondary prevention of heart disease mortality. The four indicators of the quality of the social environment that we examined were: race or ethnicity-specific population distributions, local economic resources, social isolation of elderly women, and medical care resources.

¹ U.S. Department of Health and Human Services. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. DHHS Pub. No.(PHS) 91-50212. Washington DC: U.S. Government Printing Office, 1991.

² Sclar ED. Community economic structure and individual well-being: a look behind the statistics. *International Journal of Health Services* 1980; 10:563-579.

³ Armstrong D, Barnett E, Casper M, Wing S. Community occupational structure, medical and economic resources, and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998; 8(3):184-191.

⁴ Wing S. Social inequalities in the decline of coronary mortality. *American Journal of Public Health* 1988; 78:1415-1416.

The first set of maps depicts the *population distribution* for each of the racial and ethnic groups for whom heart disease mortality data were analyzed. There are dramatic patterns of spatial concentration of racial and ethnic minorities in particular localities and regions within the United States. Geographic segregation and concentration of particular racial and ethnic groups are important predictors of access to economic opportunities, social services, and medical care resources.

Local economic resources for all counties in the United States were examined through the use of a summary index composed of three measures: white collar employment, unemployment, and family incomes. Local economic resources often determine the availability of resources for healthful living, including safe and affordable foods and recreational facilities.

In general, women in the United States have both longer life expectancy and fewer economic assets than with men. Conse-

quently, the problem of *social isolation of elderly women* is substantial. Social isolation of women can limit social interaction, social support, access to necessities of daily living, access to routine social and health services, and access to acute (emergency) medical care.⁵ Three measures of women's social isolation were examined: poverty, living alone, and mobility or self-care limitations.

Finally, *medical care resources*, particularly those related to treatment and rehabilitation of patients with heart disease, were examined. Lack of local availability of medical care resources often means prohibitively expensive and time-consuming travel to a physician or hospital in a distant location for a patient with heart disease.^{6,7} We examined local availability of three specific heart disease care resources: cardiovascular disease specialty physicians, coronary care unit beds, and cardiac rehabilitation units.

⁵ Kaplan GA, Salonen JT, Cohen RD, Brand RJ, Syme SL, Puska P. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from Eastern Finland. *American Journal of Epidemiology* 1988; 128(2):370-380.

⁶ Behringer B. Health care services in Appalachia, in Couto RA, Harris G, Simpson NK (eds); *Sowing Seeds in the Mountains: Community-Based Coalitions for Cancer Prevention and Control*. Bethesda, MD: National Cancer Institute; 1994:62-80.

⁷ Whiteis DG. Third world medicine in first world cities: capital accumulation, uneven development and public health. *Social Science and Medicine* 1998;47:795-808.

In 1990, there were 127,470,455 women of all ages, races, and ethnicities living in counties across the United States.¹ Each racial and ethnic group has its own unique geographic pattern of population distribution. The distinctive patterns reflect differences in migration histories, social and economic opportunities, political conditions, immigration rates, cultural preferences, and fertility rates.

The United States population is becoming more diverse by race and Hispanic origin. For example, from 1994 to 1995 the population of Asian and Pacific Islanders increased 3.8%, the Latino population increased 3.5%, and the black, American Indian, and Alaska Native populations increased 1.5% while the white population increased only 0.8%.² Population projections from the Bureau of the Census suggest that by 2050 the white non-Hispanic population may comprise 52.5% of the United States population compared with its 1990 level of 75.7%. Latinos may be the second largest group comprising 22.5% of the population, followed by blacks (15.7%), Asian and Pacific Islanders (10.3%) and American Indians and Alaska Natives (1.1%).³

It is important to remember that in this book, populations defined by race (Asians and Pacific Islanders, American Indians and Alaska Natives, African Americans, and whites) are not

mutually exclusive of the population defined by Hispanic origin. In other words, each of the four race groups includes women of Latina ethnicity; similarly, the Hispanic population includes women of all races. The population totals for “all women” result from the sum of the population totals for each of the four race groups.

Recent migration patterns within the United States have been characterized as responses to the following three forces: 1) a movement away from rural areas into the cities, 2) a counter-movement away from cities and suburbs to nearby non-metropolitan counties, and 3) interregional movements predominantly from east to west but increasingly from north to south and from California to the north and east.⁴

The maps in this section portray two dimensions of the population distribution for each of the racial and ethnic groups. Counties are categorized according to the number of women of each racial and ethnic group as well as the percentage of women in the county who belong to each racial and ethnic group. These two dimensions allow the reader to identify the counties with the largest populations of women for each racial and ethnic group while also noting where each racial and ethnic group is most heavily concentrated.

¹ Bureau of the Census. *We the American women*. Washington DC: U.S. Government Printing Office, September 1993.

² Deardorf KE and Montgomery P. National population trends. In U.S. Bureau of the Census, current population reports, series p23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office, 1995.

³ Day JC. National population projections. In U.S. Bureau of the Census, current population reports, series p23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

⁴ Paterson JH. *North America*. Oxford: Oxford University Press, 1994, pp.58-60.

American Indian and Alaska Native Women

According to the Bureau of the Census, in 1990 there were 1,959,234 American Indians and Alaska Natives living in the United States.¹ With over 500 federally recognized tribes, there is substantial geographic, cultural, historical and linguistic diversity among American Indian and Alaska Native peoples. The tribes also vary in size, with only four tribes having greater than 100,000 members: Cherokee, Navajo, Chippewa and Sioux.²

In 1990, nearly one-half the American Indian and Alaska Native population lived in the West, 29% lived in the South, 17% lived in the Midwest and 6% lived in the Northeast.¹ The concentration of American Indians and Alaska Natives in the West and the small population sizes in the Northeast reflect the effects of the Indian Removal Bill passed in 1830, which mandated the removal of all Indians east of the Mississippi River.³ Many of the tribal nations from the East were forced to resettle in what is now Oklahoma. In 1990, Oklahoma was the state with the largest population of American Indians and Alaska Natives. More than one half of the American Indian and Alaska Native population lived in just six states—all located in the West: Oklahoma, California, Arizona, New Mexico, Alaska, and Washington.² The tribal nations currently residing in the East are descendants of small bands of Indians who escaped removal and managed to remain on their native lands. The largest American Indian populations in the East are located in New York and North Carolina.³

The map (opposite page) depicts the county distribution of the population of American Indian and Alaska Native women ages

35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were American Indian or Alaska Native (labeled *proportion* on the legend) are displayed. Counties were assigned to one of nine categories based on both population size and proportion of women who were American Indian or Alaska Native. Counties of the lightest color on the map had fewer than 5,000 American Indian and Alaska Native women who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of American Indian and Alaska Native women. A detailed guide to interpreting this map can be found on page 31.

Counties with the highest proportions of American Indian and Alaska Native women were located primarily in the following western states: Alaska, Arizona, New Mexico, Utah, North Dakota, South Dakota, and Montana. None of the counties in the United States had populations of American Indian and Alaska Native women that were larger than 50,000. The vast majority of United States counties had populations of American Indian and Alaska Native women that were smaller than 5,000 and comprised less than 10% of the population of women. This pattern reflects the fact that a) only 22.3% of the American Indian and Alaska Native population live on reservations² and b) most of the 314 reservations and trust lands have populations of fewer than 1,000 (only 10 reservations had populations greater than 7,000; see table). With the exception of Los Angeles and Phoenix, American Indian and Alaska Native women live predominantly in non-metropolitan areas.

Ten Reservations with the Largest Numbers of American Indians and Alaska Natives: 1990

Navajo (AZ, NM, UT*)	143,405
Pine Ridge (NE, SD*)	11,182
Fort Apache (AZ)	9,825
Gila River (AZ)	9,116
Papago (AZ)	8,480
Rosebud (SD*)	8,043
San Carlos (AZ)	7,110
Zuni Pueblo (AZ, NM)	7,073
Hopi (AZ*)	7,061
Blackfeet (MT)	7,025

* includes trust lands

¹ Paisano EL. The American Indian, Eskimo, and Aleut population. In U.S. Bureau of the Census, Current Population Reports, Series P23-189, *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

² Bureau of the Census. *We the first Americans*. Washington DC: U.S. Government Printing Office: September 1993.

³ Snipp CM. *American Indians: The First of This Land*. New York: Russel Sage Foundation, 1989.

American Indian and Alaska Native Women
Ages 35 Years and Older

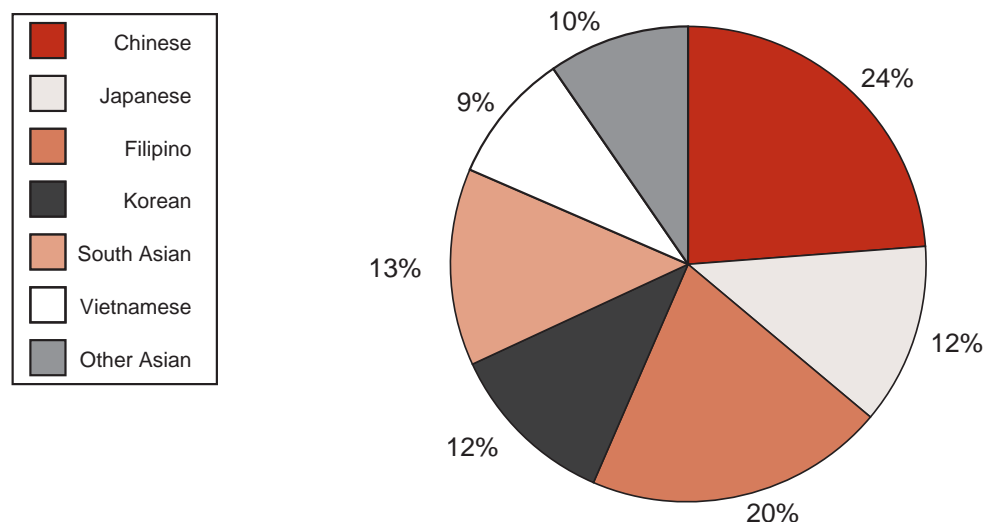


Asian and Pacific Islander Women

The Asian and Pacific Islander population in the United States is diverse in ethnicity, language, and country of origin. The 1990 Census counted 7.3 million Asians and Pacific Islanders, who comprised about 3% of the total population.¹ Asians and Pacific Islanders in the United States reside predominantly in metropolitan areas and are also more likely to reside in central cities than non-Hispanic whites.¹

Asians of various ethnicities comprise 95% of the total Asian and Pacific Islander population.² About one-half of Asians in the United States are of Chinese, Japanese, or Korean ethnicity (Figure 3.1). Other significant groups include Filipinos, South Asians (Indians, Pakistanis, Bangladeshis, and Sri Lankans), and Vietnamese. Overall, 66% of Asians were born in foreign countries, but the percent of foreign-born individuals varies considerably by ethnicity. In 1990, only 32% of persons of Japanese ancestry were foreign-born.²

Figure 3.1
Asian Populations in the
United States, 1990



¹ Bennett CE, Martin B. The Asian and Pacific Islander Population, pp.48-49, in U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

Pacific Islanders comprise approximately 5% of the total Asian and Pacific Islander population. Most Pacific Islanders were Hawaiian (58%) in 1990, followed by Samoan (17%), Guamanian (14%) and all other (11%).³ Pacific Islanders reside predominantly in the western United States; in 1990 75% of Pacific Islanders lived in either Hawaii or California. Only 13% of Pacific Islanders living in the United States in 1990 were born outside the United States.

The map (opposite page) depicts the county distribution of the population of Asian and Pacific Islander women ages 35 years and older in 1995. Numbers of women (labeled *population* on the legend) and the proportion of all women who were Asian or Pacific Islander (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were Asian or Pacific Islander. Counties with the lightest color on the map had fewer than 5,000 Asian and Pacific Islander women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of Asian and Pacific Islander women. A detailed guide to interpreting this map can be found on page 31.

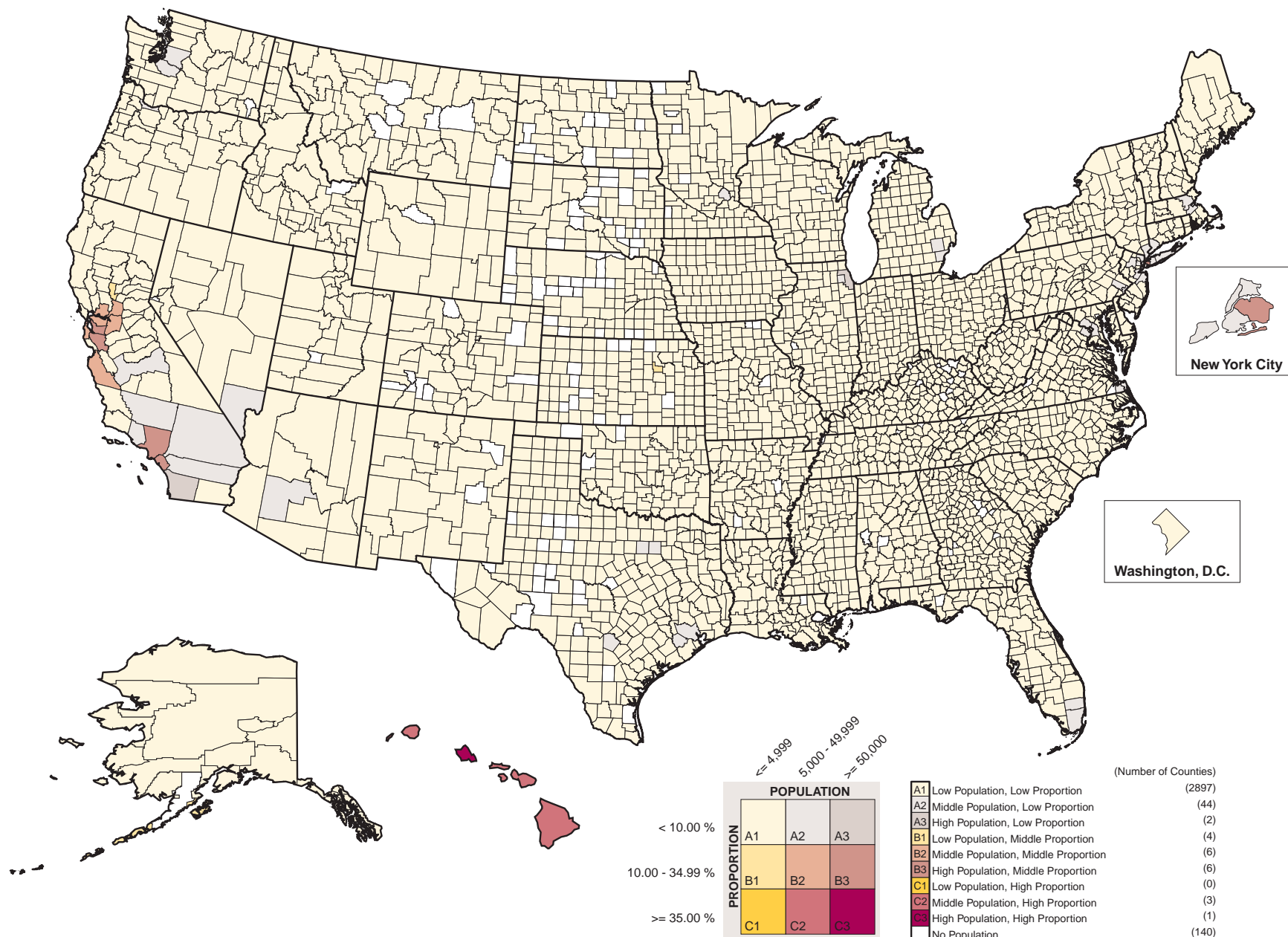
Although only 140 counties in the U.S. had no Asian or Pacific Islander women ages 35 years and older in 1995, the great majority of counties (n=2897) were included in the lowest category of both population size and proportion. High proportions of Asian and Pacific Islander women were found in Hawaii, several counties in California, and Queens County, New York (part of New York City). Moderately sized populations of Asian and Pacific Islander women resided in several metropolitan areas, including New York City, Boston, Washington, Miami, Houston, Dallas, and Seattle.

² Bureau of the Census. *We the Americans: Asians*. Washington DC: U.S. Government Printing Office: September 1993.

³ Bureau of the Census. *We the Americans: Pacific Islanders*. Washington DC: U.S. Government Printing Office: September 1993.

Geographic Distribution of Population 1995

Asian and Pacific Islander Women Ages 35 Years and Older



The 1990 United States census counted almost 30 million blacks, who comprised 12% of the total population.¹ Most African American people in the United States today are descended from West Africans who were forcibly relocated to work as slaves in European colonies in the Caribbean and North America from the sixteenth to the nineteenth centuries. A small proportion of U.S. blacks are recent immigrants from Africa. The geographic distribution of the African American population today reflects the original settlement of early African migrants in the South as well as more recent internal migrations to northeastern and midwestern cities.² Today most blacks nationwide live in metropolitan areas (83.8%), but a substantial proportion of African Americans in the South live either in non-metropolitan areas (28.0%) or outside of central cities (27.9%).³

The map (opposite page) depicts the county distribution of the population of black women ages 35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were black (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were African American.

Counties of the lightest color on the map had fewer than 5,000 black women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of African American women. A detailed guide to interpreting this map can be found on page 31.

Black women are the second most numerous and geographically dispersed group of women in the nation, and they composed 35% or more of the total population of women in 205 counties in 1995. These counties included the cities of Memphis, Atlanta, Washington DC, New York City, and Detroit and a number of smaller metropolitan and rural counties in the southern states of Louisiana, Arkansas, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia. Outside the South, African American women resided predominantly in moderate to large metropolitan areas, including Chicago, Los Angeles, San Francisco, and St. Louis. A substantial number of counties nationwide had no African American women residents in 1995 (n=398), and a majority (n=1,916) had low populations as well as low proportions of Black women.

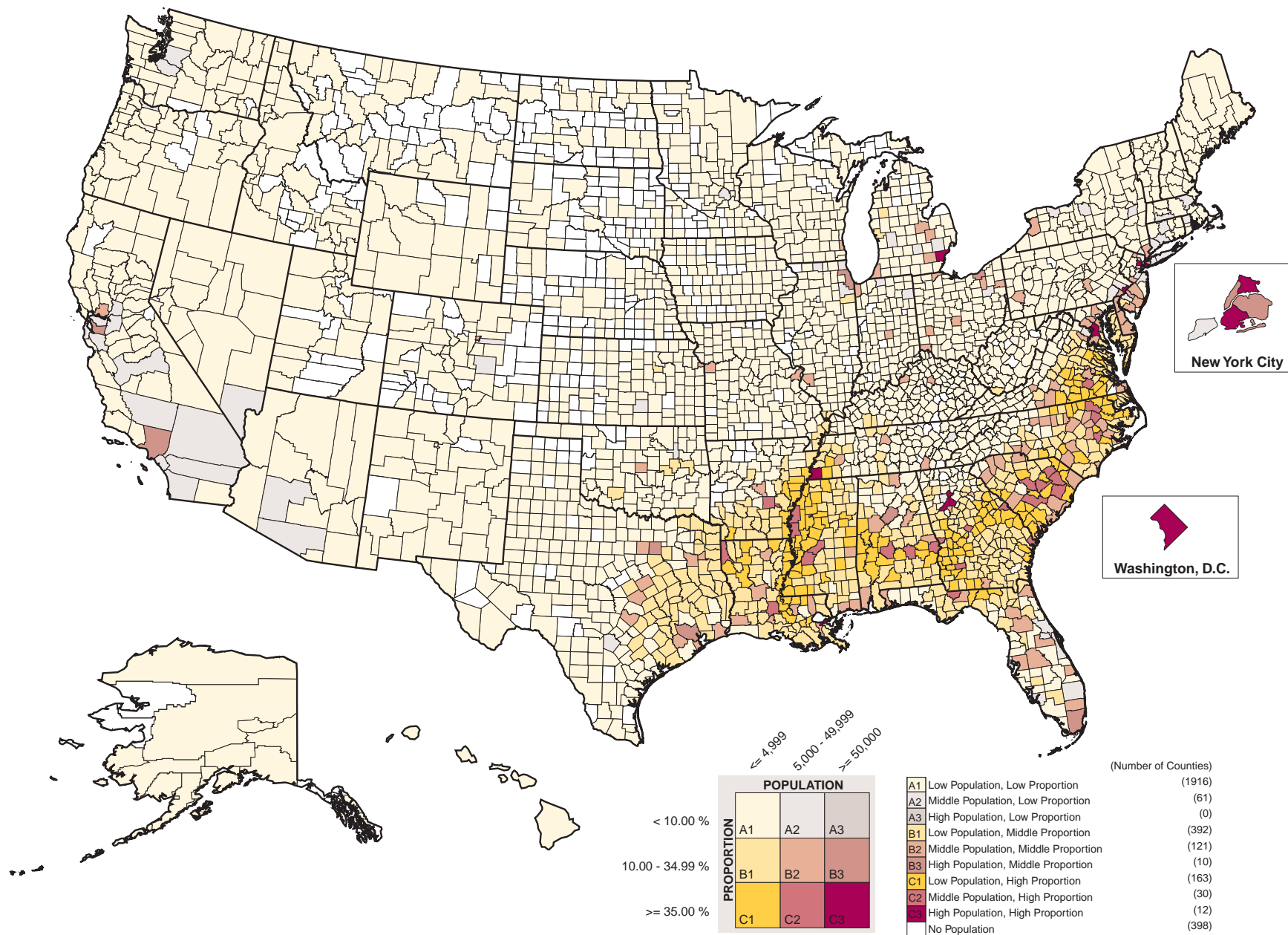
¹ Bennett CE, DeBarros KA. The Black Population. pp.44-45, In U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

² Smallwood AD. *The Atlas of African-American History and Politics: From the Slave Trade to Modern Times*. Boston: McGraw Hill, 1998.

³ Bureau of the Census. *We the Americans: Blacks*. Washington DC: U.S. Government Printing Office: September 1993.

Geographic Distribution of Population 1995

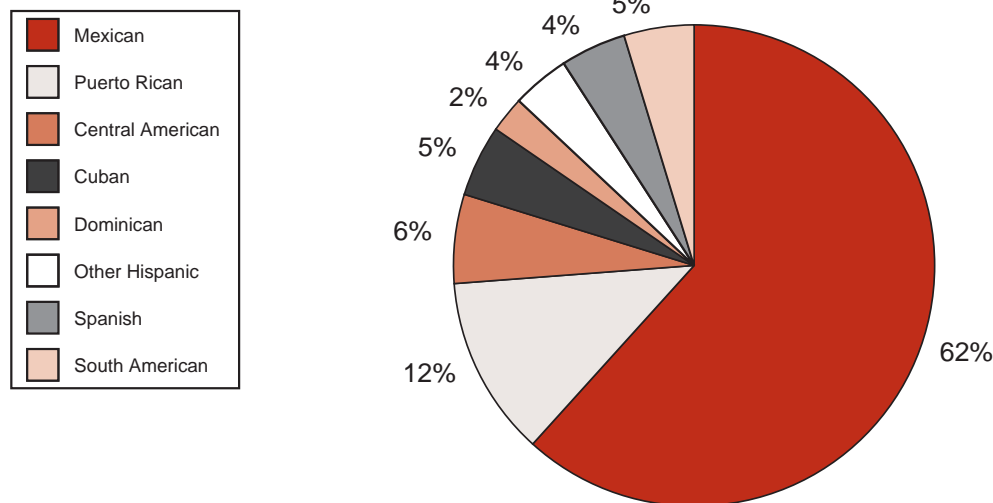
Black Women Ages 35 Years and Older



Hispanic Women

The terms “Hispanic” or “Latino/a,” as defined by the Federal Office of Management and Budget, refer to persons of Spanish culture or origin, regardless of race. This population in the United States includes people who refer to themselves as Chicana/o, Puerto Rican, and Cuban, among many other designations.¹ In 1993 there were 22.8 million persons of Latino origin, comprising nearly 9% of the total population.² The Hispanic population is diverse in ethnicity, culture, and country of origin. As shown in Figure 3.2, most Latinos in the United States are of Mexican origin (61.2%), followed by Puerto Rican origin (12.1%), and Central American origin (6%).³ Of all Hispanics in the United States in 1990, the majority were native born (64.2%), and an additional 9.4% were naturalized citizens.³

Figure 3.2
Hispanic Populations in the
United States, 1990



¹ Oboler S. Hispanics? That's what they call us, pp 3-5, In Delgado R, Stefancie J (eds). *The Latino/a Condition*. New York: New York University Press: 1998.

² Del Pinal J. The Hispanic Population, pp.46-47, In U.S. Bureau of the Census, Current Population Reports, Series P23-189. *Population Profile of the United States: 1995*. Washington DC: U.S. Government Printing Office: 1995.

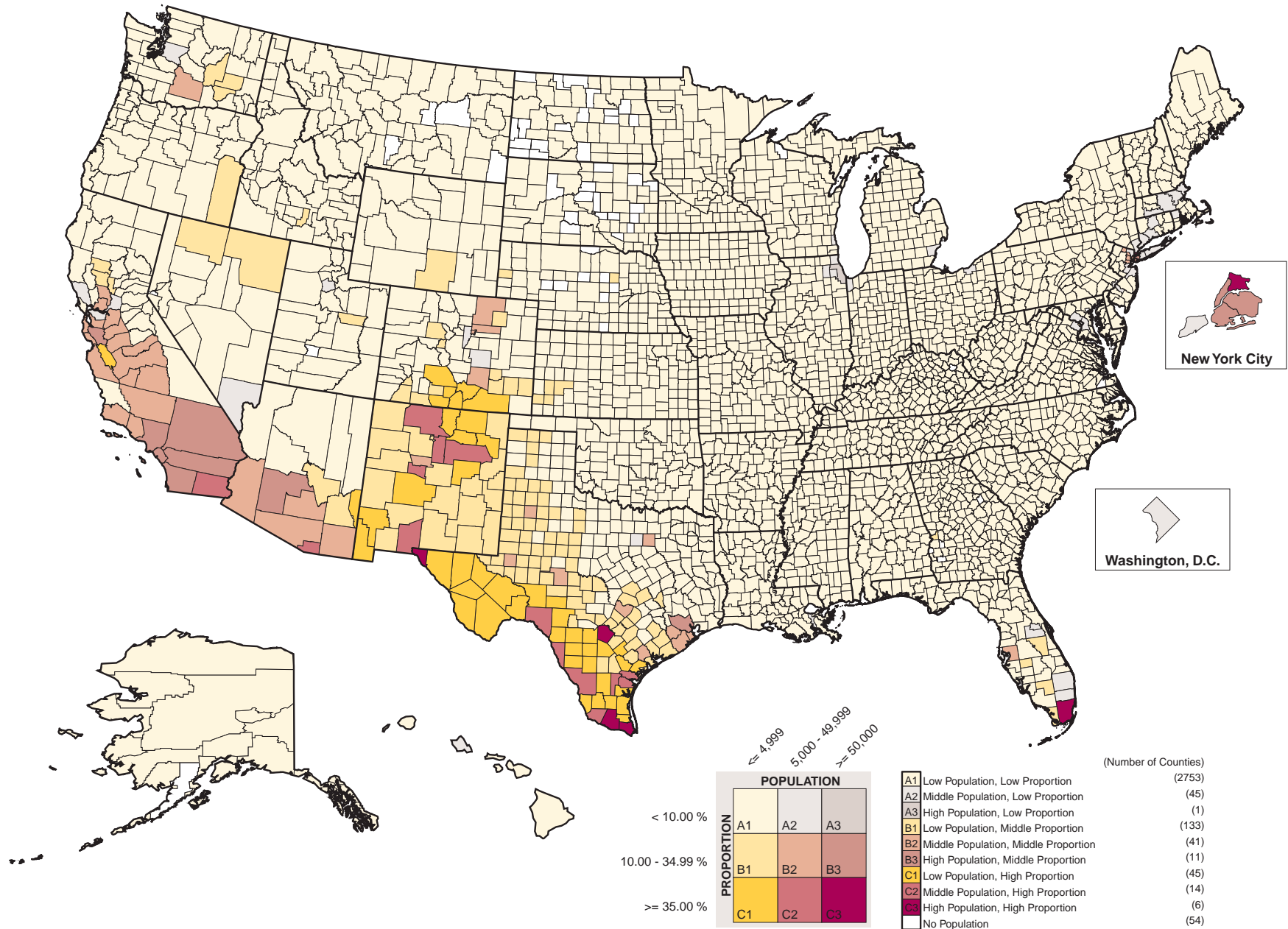
The map (opposite page) depicts the county distribution of the population of Latina women ages 35 years and older in 1995. It is important to remember that, in this book, the population of Hispanic women was defined to include women of all races. Similarly, the populations of women in each race group include some women of Latina origin. On the map, both numbers of women (labeled *population* on the legend) as well as the proportion of all women who were Hispanic (labeled *proportion* on the legend) are displayed. Counties were assigned to one of nine categories based on both population size and proportion of women who were Latina. Counties of the lightest color on the map had fewer than 5,000 Hispanic women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on the map had greater numbers or proportions of Latina women. A detailed guide to interpreting this map can be found on page 31.

In 1995 there were six counties that had both a large population and a high proportion of Hispanic women. These included the Bronx in New York City, Miami, San Antonio, El Paso, and Brownsville. Several other counties in the Southwest, Florida, and the New York City metropolitan area had either moderate or large populations or proportions of Latina women. In California, large populations of moderate proportion were found in Los Angeles, San Francisco, and a number of agricultural counties in central California. In New Mexico, Hispanic women comprised at least 10% of all women in every county. Only 54 counties in the United States had no Latinas, but most counties (n=2753) had fewer than 5,000 Hispanic women in 1995.

³ Bureau of the Census. *We the Americans: Hispanics*. Washington DC: U.S. Government Printing Office, September 1993.

Geographic Distribution of Population
1995

Hispanic Women
Ages 35 Years and Older



Whites are the majority population in the United States, with white women (n=102,210,190) comprising 80% of women from all racial and ethnic groups combined in 1990.¹ Within the white population there is also a diversity of cultural and historical backgrounds. The diversity is reflected in the ancestry of the US population. Among the top 10 most frequently reported ancestry groups in the nation are the following subgroups of whites: Germans (23% of the total population), Irish (16%), English (13%), Italian (6%), French (4%) and Polish (4%). Populations of white women and men live in all counties across the nation, but many of the subgroups are heavily concentrated in specific regions. For example, more than half the nation's Italians are found in the northeast, half the Norwegians and Czechs in the Midwest, and more than 40 percent of the Scots-Irish are found in the South.²

The map (opposite page) depicts the county distribution of the population of white women ages 35 years and older in 1995. Both numbers of women (labeled *population* on the legend) and the proportion of all women who were white (labeled *proportion* on the legend) are displayed on the map. Counties were assigned to one of nine categories based on both population size and proportion of women who were white. Counties of the lightest color on the map had fewer than 5,000 white women, who comprised fewer than 10% of all women ages 35 years and older in those counties. Darker-colored counties on

the map had greater numbers or proportions of white women. A detailed guide to interpreting this map can be found on page 31.

Regardless of population size, white women comprised at least 35% of the population in all but 25 of the counties in the United States, and there were no counties where white women accounted for fewer than 10% of the population. The states that had several counties where white women were fewer than 35% of all women included Alaska (where the majority of the population is Alaska Native), New Mexico and Arizona (where parts of the land belong to American Indian Tribal Nations), and several southern states with rural counties that are predominantly black.

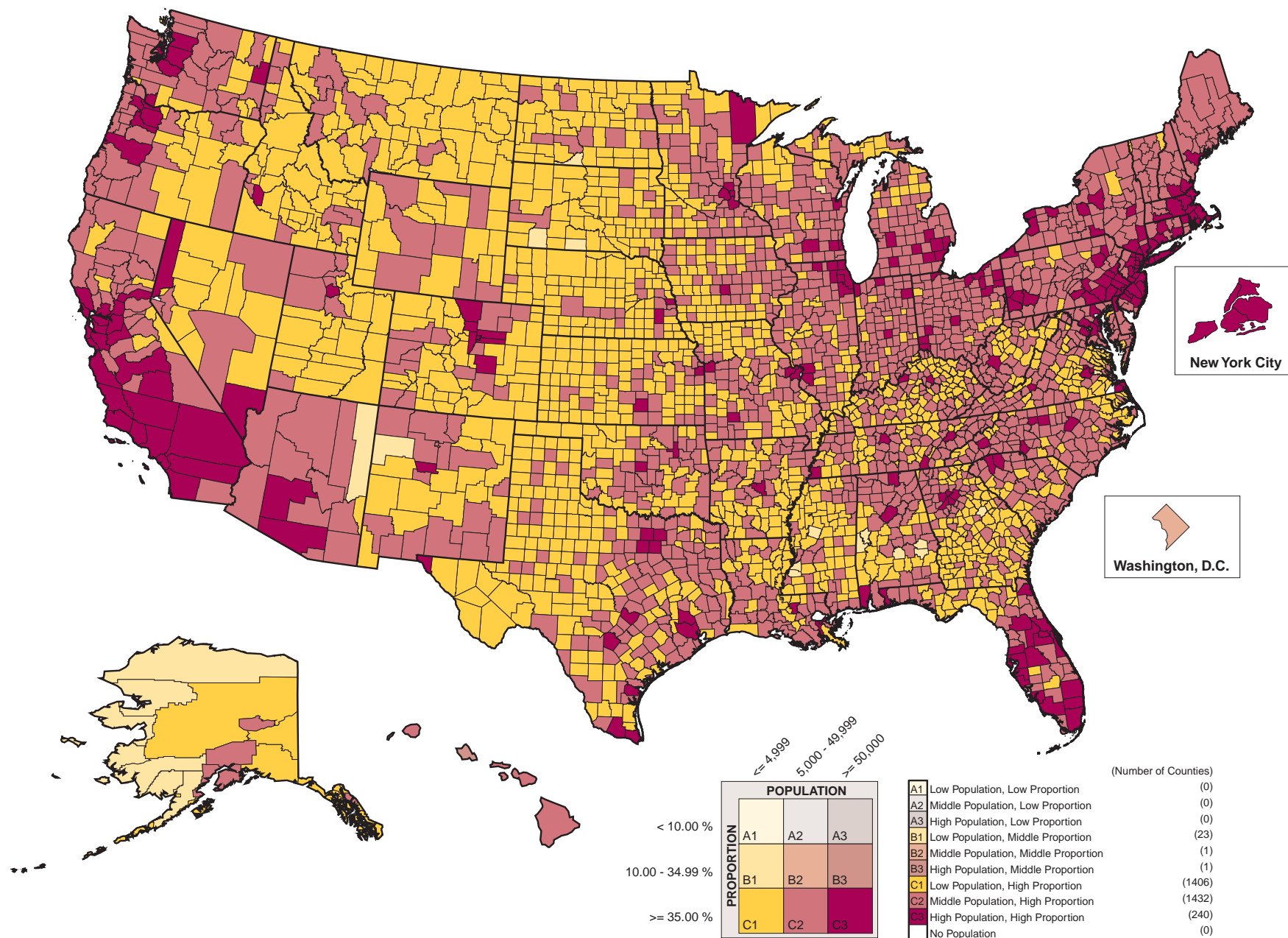
The distribution of population size among white women reflects the urban-rural population patterns in the United States. Counties with at least 50,000 white women were concentrated along the southern coast of California, the northeastern corridor along the Atlantic and southern Florida with growing clusters in the Northeast, Mid West, South, and Pacific Northwest. Surrounding each of the urban centers were counties in the mid-population range. Counties with fewer than 5,000 women were observed in the southern regions of Georgia and Alabama, the Mississippi Delta, and the interior of the country from the northwestern quadrant of Texas due north through the plains and up to the Dakotas.

¹ Bureau of the Census. *General Population Characteristics: United States*. 1990 Census of Population. 1990 CP-1-1. Washington DC: Bureau of the Census, 1993.

² Bureau of the Census. We asked...You told us: Ancestry. Census Questionnaire Content, 1990 CQC-14. Washington DC: Bureau of the Census, February 1995.

Geographic Distribution of Population 1995

White Women Ages 35 Years and Older



In the United States, uneven development has created a highly variable landscape of socioeconomic conditions and opportunities. Uneven economic development has resulted in a concentration of wealth and resources in some areas (usually large cities) and underdevelopment of other, predominantly rural areas.¹ Underdevelopment is an historical, political, and economic process by which wealth generated within a region (by the labor of its residents) is exported outside the region (by owners of firms, factories, and mines) rather than being reinvested within the region to benefit local communities.² Developed economic centers, including many large metropolitan areas, typically enjoy high levels of economic activity and economies of scale that result in increased median incomes and greater availability of public, social, cultural, and health services than in smaller urban and rural areas.³⁻⁷

Several studies have shown that, compared with high-resource areas, local communities with low levels of economic resources,

as measured by income, occupation, and education profiles, had higher rates of heart disease mortality from the 1960s to the 1980s, and were slower to experience the onset of decline in heart disease mortality in the 1960s and 1970s.^{3,8} Per capita government expenditures for employment, social, and health services were lower in these areas than in high economic resource areas.³

The uneven distribution of local economic resources within the United States poses significant barriers to the development of standardized community-wide programs and policies to reduce the burden of heart disease. Differences in the local economic infrastructure should be considered when community-based programs to prevent heart disease are being designed. Documentation of the geographic distribution of local economic resources may also suggest important directions for further research on the determinants of geographic inequalities in heart disease mortality among women.

¹ Fox K. Uneven regional development in the United States. *Review of Radical Political Economy* 1978;10:68-86.

² Lyson TA, Falk WW. Forgotten places: poor rural regions in the United States, in Lyson TA, Falk WW (eds); *Forgotten Places: Uneven Development in Rural America*. Lawrence, University of Kansas Press; 1993.

³ Armstrong D, Barnett E, Casper M, Wing S. Community occupational structure, medical and economic resources and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998;8:184-191.

⁴ Sclar ED. Community economic structure and individual well-being: A look behind the statistics. *International Journal of Health Services* 1980;10:563-579.

⁵ Barnett E, Elmes GA, Braham VE, Halverson JA, Lee JY, Loftus S. *Heart Disease in Appalachia: An Atlas of County Economic Conditions, Mortality, and Medical Care Resources*. Prevention Research Center, West Virginia University, Morgantown, WV, June 1998.

⁶ Whiteis DG. Third world medicine in first world cities: capital accumulation, uneven development and public health. *Social Science and Medicine* 1998;47:795-808.

⁷ Behringer B. Health care services in Appalachia, in Couto RA, Harris G, Simpson NK (eds); *Sowing Seeds in the Mountains: Community-Based Coalitions for Cancer Prevention and Control*. Bethesda, MD: National Cancer Institute; 1994:62-80.

⁸ Wing S. Social inequalities in the decline of coronary mortality. *American Journal of Public Health* 1988;78:1415-1416.

The geographic distribution of local economic resources was examined in this report using a summary index based on three measures. *Median family income* has been used independently as an indicator of economic development by social scientists.¹ *Occupational structure* was measured by the proportion of employed workers in white collar jobs—i.e., managerial, professional, technical, sales, and administrative support positions. Occupational structure reflects the division of labor within a local population and the position of a local community in the larger national and international economies.² The *unemployment rate* is defined as the proportion of workers in the civilian labor force who currently are not employed and are also actively looking for work. It is a direct indicator of local economic opportunity and underdevelopment. A high unemployment rate negatively affects all members of the labor force, including those who are employed, by providing leverage for employers to keep wages and benefits low.^{3,4}

The three variables that composed the summary index of local economic resources (median family income, percent white collar employment, and percent unemployed) were all measured in 1990. Data for the index of local economic resources were obtained from the Area Resource File. Details about this data source can be found in Appendix B. The index was calculated by ranking all counties separately for each variable. For each variable, the counties were then categorized into deciles, and each decile was assigned a score ranging from zero to nine. Counties in the decile with the poorest economic conditions (lowest median income, lowest occupational structure, highest unemployment rate) were assigned a score of zero and counties in the decile with the most advantaged economic conditions were assigned a score of nine. For each county, the scores from the three variables were added together to arrive at the index score.

¹ Nielsen F, Alderson AS. The Kuznets curve and the great U-turn: income inequality in U.S. counties, 1970 to 1980. *American Sociological Review* 1997;62:12-33.

² Armstrong D, Barnett E, Casper M, Wing S: Community occupational structure, medical and economic resources and coronary mortality among US blacks and whites, 1980-1988. *Annals of Epidemiology* 1998;8:184-191.

Values of the index score ranged from zero (counties that were in the lowest decile for all three dimensions of the index) to 27 (counties that were in the top decile for all three dimensions of the index). Counties were divided into five groups with roughly equal ranges of index values on the map. Dark colors represent counties with the least favorable local economic resource profiles, and light colors represent counties with the most favorable profiles.

A distinctive pattern was apparent for the geographic distribution of local economic resources in 1990. Clusters of counties with very unfavorable local economic resource profiles were found in several rural, underdeveloped regions of the country. These regions included Appalachia, the Mississippi Delta, the Texas border counties, and the Cotton Belt counties of the South. Unfavorable local economic resource profiles were found in many other counties as well, mostly in rural areas.

Clusters of counties with the most favorable local economic resource profiles were found in the metropolitan areas of the eastern seaboard from the District of Columbia, and north through the New York City metropolitan area to Boston. Metropolitan and surrounding counties in southern Florida, the San Francisco Bay area, and southern California also had very favorable local economic resource profiles in 1990.

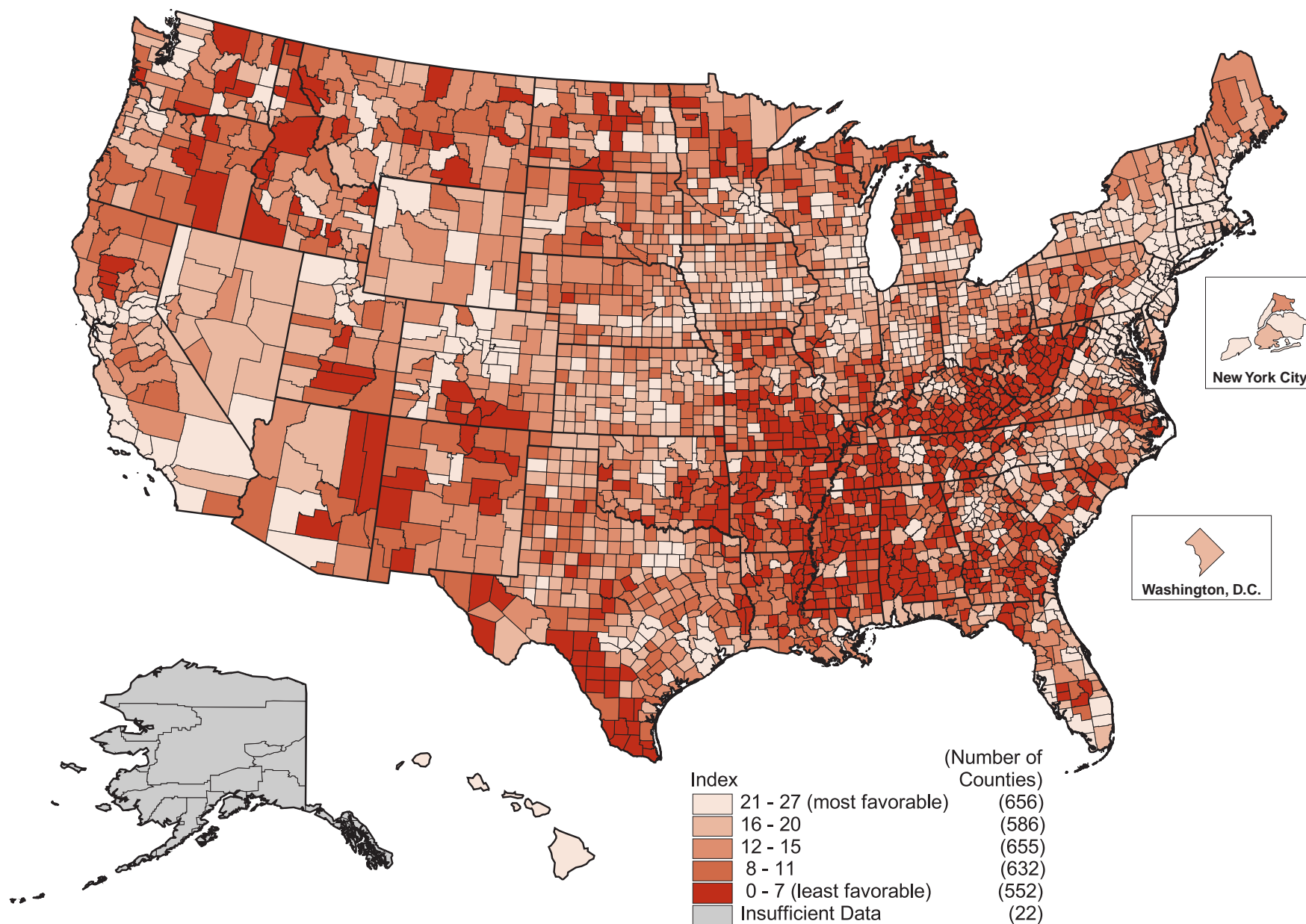
The contrast in levels of local economic resources between rural and metropolitan counties was most apparent in Appalachia and the South. In Kentucky, the cities of Lexington and Louisville had favorable local economic resource profiles, but rural counties to the east had very unfavorable profiles. The same contrast was evident for Nashville, Tennessee and Jackson, Mississippi and the surrounding rural counties.

³ Lyson TA, Falk WW (eds): *Forgotten places: uneven development in rural America*. Lawrence: University of Kansas Press, 1993.

⁴ Lobao LM. *Locality and inequality: farm and industry structure and socioeconomic conditions*. Albany: The State University of New York Press, 1990.

Local Economic Resource Index
1990

Total Population
All Ages



The majority of heart disease deaths among adult women of all racial and ethnic groups during 1991-1995 occurred among elderly women (60 years and older). Compared with young and middle-aged women, elderly women are at increased risk of heart disease mortality not just because of their age but also because of increased social vulnerability. Elderly women are more likely to live in poverty, to live alone, to suffer from physical disabilities, and to lack adequate social support compared with other demographic groups. Longer life expectancy among women than among men results in many women surviving longer than their spouses. Widowed, divorced, and single elderly women are particularly vulnerable to social isolation resulting from inadequate economic resources and from living alone.

Data on two dimensions of women's social isolation were obtained from the 1990 Special Tabulation on Aging compiled by the Bureau of the Census. This data set contains summary statistics for elderly women and men abstracted from the 1990 Census of Population and Housing.

Two indicators of women's social isolation were mapped: percent of women living alone, and the percent of women with mo-

bility or self-care limitations. *Living alone* was defined as an individual living in a household without a spouse, other family members, or friends. A *mobility limitation* was defined as a health condition, either physical or mental, that lasted for six months or more, that made it difficult to go outside the home alone. A *self-care limitation* was defined as a health condition, either physical or mental that lasted for six months or more, that made it difficult to take care of personal needs, such as dressing, bathing, or getting around inside the home.

To produce the maps of women's social isolation, we first excluded 32 counties with fewer than 100 women over the age of 60 years old in 1990. For each measure of women's social isolation, the distribution of county values was divided into quintiles (five categories with an approximately equal number of counties) respectively. These five categories were used to map each measure of women's social isolation. Dark colors on the maps indicate high prevalence of social isolation among women and light colors on the map indicate a relatively low prevalence of social isolation among women.

A study of social isolation and heart disease found a two- to threefold excess risk of death from heart disease for individuals who were socially isolated.¹ Living alone is an important indicator of social isolation for elderly women. Moreover, there also may be physiological conditions that result from social isolation, such as increased blood pressure, which is an important heart disease risk factor.¹

A study of women's economic status found that women who lived alone were at a significant economic disadvantage compared with women who did not live alone.² In addition, women who lived alone in rural areas had only 69% of the income levels of women in urban areas who lived alone.²

Living alone also contributes to women's risk for heart disease mortality by increasing barriers to medical care access. Women living alone are at greater risk during an emergency. Acute events such as chest pain, loss of breath, dizziness, and heart attacks are best treated with immediate intervention, which is less likely to occur if family and friends are not close at hand.

For this study, living alone was defined for the noninstitutionalized population aged 60 years and older as an individual living in a household without a spouse, other family members or friends. In the United States in 1990, 35.3% of all women aged 60 years and older lived alone.

Substantial geographic inequality in the percent of women living alone was observed, with county values ranging from 5.6% to 52.4%. Large areas of the country had high proportions of elderly women living alone, including much of the South, New England, and the Midwest. Regions of the country with proportionately large Hispanic populations, such as the Texas border region, the Southwest, California, and Florida, had lower proportions of elderly women living alone. The low proportions of elderly women living alone in areas that also have low levels of economic resources, such as native areas of Alaska and Hawaii and Hispanic areas of Texas and the Southwest may reflect local cultural norms and practices that encourage extended family households.

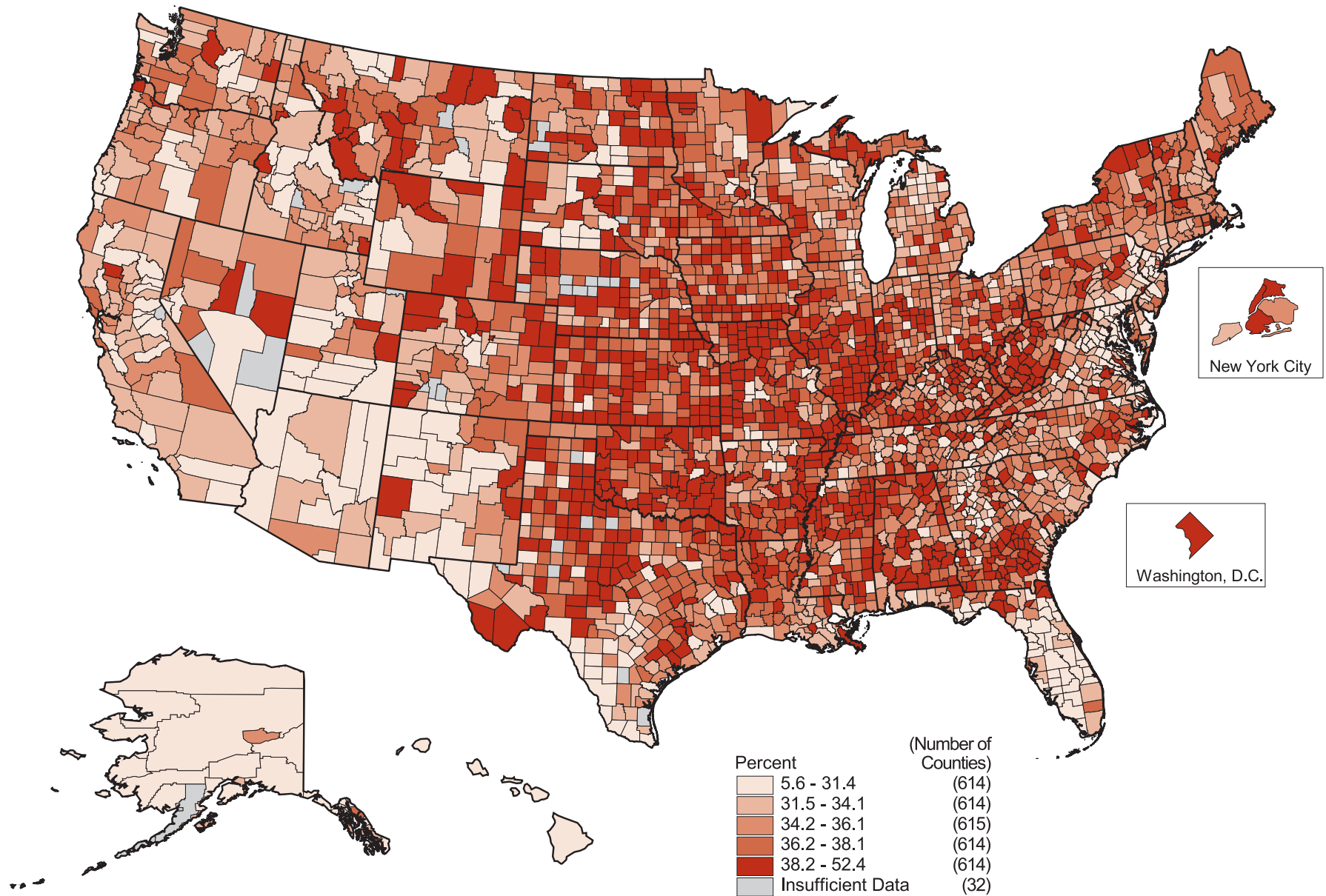
Central city counties of several large metropolitan areas, such as Washington DC and New York City, had high proportions of women living alone, whereas surrounding suburban counties had low proportions of women living alone. Most counties in Florida had very favorable conditions, with low proportions of women living alone. This may reflect greater numbers of retirement communities and nursing homes and the greater economic resources and better health status of elderly persons who migrate to Florida after retirement.

¹ Kaplan GA, Salonen JT, Cohen RD, Brand RJ, Syme SL, Puska P. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from eastern Finland. *American Journal of Epidemiology* 1988; 128(2): 370-380.

² Rogers CC. Changes in the social and economic status of women by metro-nonmetro residence. *Agriculture Information Bulletin* No. 732. Washington DC: Economic Research Service, US Department of Agriculture.

Percent of the Elderly Population Living Alone
1990

All Women
Ages 60 and Older



Elderly Women with Mobility or Self-Care Limitations

Mobility limitations and self-care limitations are inherent health risk factors for women 60 years of age. A *mobility limitation* is defined as a health condition, either physical or mental that lasts for six months or more, that makes it difficult to go outside the home alone. A *self-care limitation* is defined as a health condition, either physical or mental that lasts for six months or more, that makes it difficult to take care of personal needs, such as dressing, bathing, and getting around inside the home. Mobility limitations may deter many elderly women from pursuing and maintaining regular preventative health care visits to hospitals or physicians offices. Self-care limitations may prevent elderly women from taking prescribed medications, eating regular meals and following physician's advice for mental and physical treatment.

In the United States in 1990, 19.8% of elderly women suffered from a mobility or a self-care limitation. Substantial geographic variation in the prevalence of mobility and self-care limitations was observed, with county values ranging from 2.4% to 40.4%. The midrange of the highest quintile (33.9%) was approximately four times higher than the midrange of the lowest

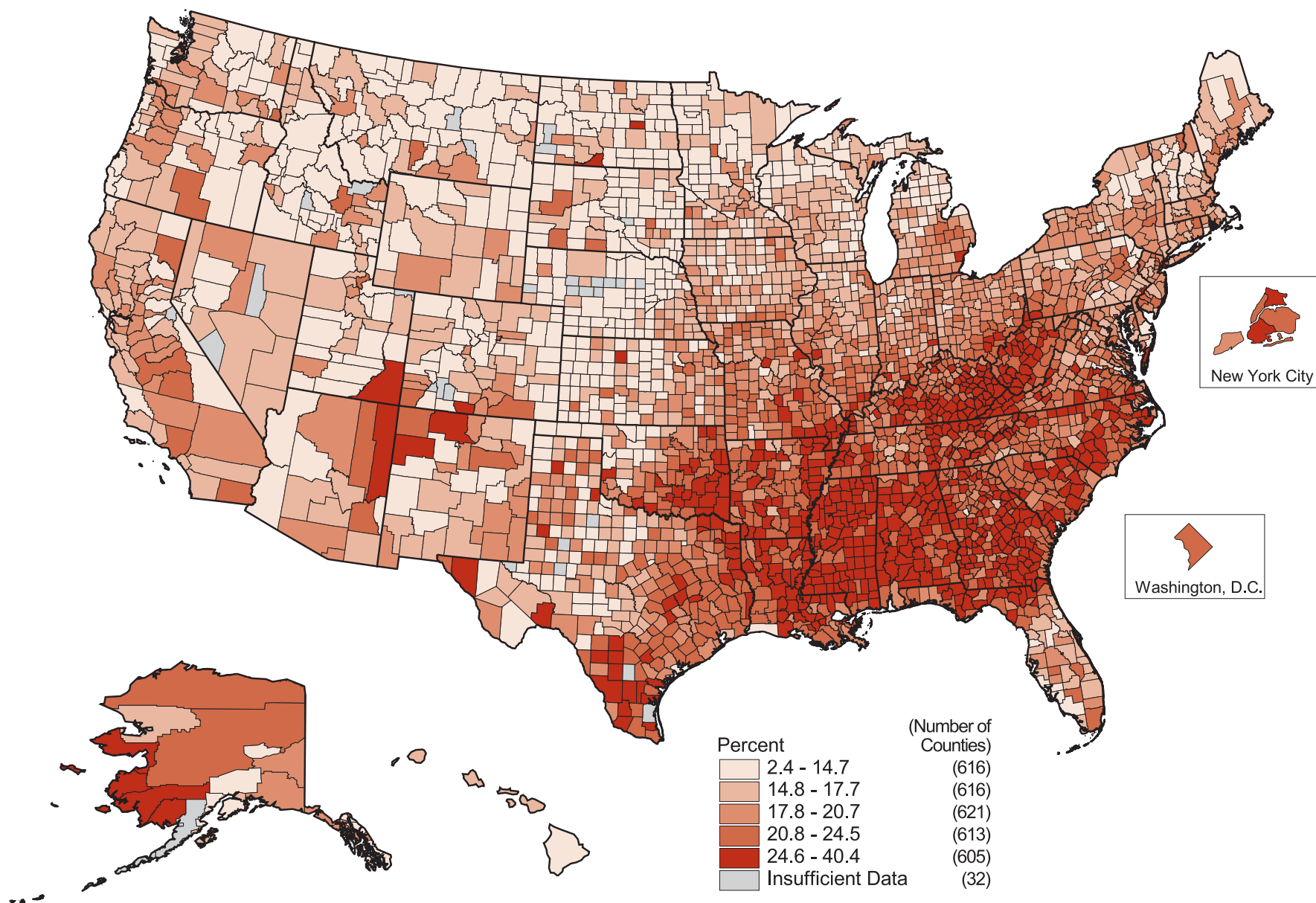
quintile (7.8%). Low proportions of women living with mobility or self-care limitations were found in counties in upper New England, the upper Midwest and most of the West, including Hawaii. An exception to this pattern was the Four Corners region of Arizona, New Mexico, Colorado, and Utah, a region with a large American Indian population, where high proportions of women living with mobility or self-care limitations were observed.

The highest proportions of elderly women living with mobility or self-care limitations were found in counties in the South, Central Appalachia, and the lower Midwest; in these regions, high proportions were found in rural and urban counties. Both New York City and Washington, DC, had high proportions of elderly women living with mobility or self-care limitations.

In general, high proportions of women living with mobility or self-care limitations may reflect high underlying levels of poverty and economic disadvantage, as well as a higher proportion of very elderly people (85 years and older) in those geographic areas. Among the elderly (60 years and older), the "oldest old" have the highest prevalences of mobility and self-care limitations.

Percent of the Elderly Population with Mobility or Self-Care Limitations
1990

All Women
Ages 60 and Older



The availability and accessibility of medical care resources play an important role in the secondary prevention of heart disease. The American Heart Association defines secondary prevention as “identifying and treating persons with established disease and those at very high risk of developing disease, and treating and rehabilitating patients who have had a heart attack to prevent a second cardiovascular event”.¹

There are currently a number of thrombolytic therapies (“clot busters”) that can save lives if administered within 12 hours after the onset of heart attack symptoms. In clinical studies thrombolytic drugs have been associated with an overall 25% to 30% reduction in mortality from acute myocardial infarction.² The greatest improvements in survival occur if drugs are given within 1 to 2 hours after the onset of symptoms. Invasive cardiac procedures (e.g. angioplasty, coronary artery bypass surgery, and cardiac stents) can also save lives and reduce disabilities related to heart disease if they are performed in a timely fashion.

The benefits of drug treatments and surgical procedures depend on widespread recognition of the signs and symptoms of a heart attack and rapid access to quality medical care facilities and health professionals. For many women in the United States, however, there are substantial barriers to receiving needed medical care. These barriers include poverty, lack of health insurance, rural isolation, social isolation, and absence of cardiac care physicians and facilities in their communities. Women of minority race or ethnic groups may be particularly disadvantaged in their access to medical care resources, given the geographic distribution of these populations, indicating these areas may be underserved.

Local availability of three specific medical care resources was examined: cardiovascular specialty physicians, coronary care unit beds, and cardiac rehabilitation units. County data on the availability of these resources were obtained from the Area Resource File (see Appendix B for details). County-specific data were not available for Alaska.

¹ American Heart Association. *1998 Heart and Stroke Statistical Update*. Dallas, TX: American Heart Association 1997.

² Ryan TJ, Anderson JL, Antman EM, et al. ACC/AHA Guidelines for the management of patients with acute myocardial infarction: executive summary. A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Management of Acute Myocardial Infarction). *Circulation* 1996; 94:2341-2350.

Cardiovascular Disease Specialty Physicians

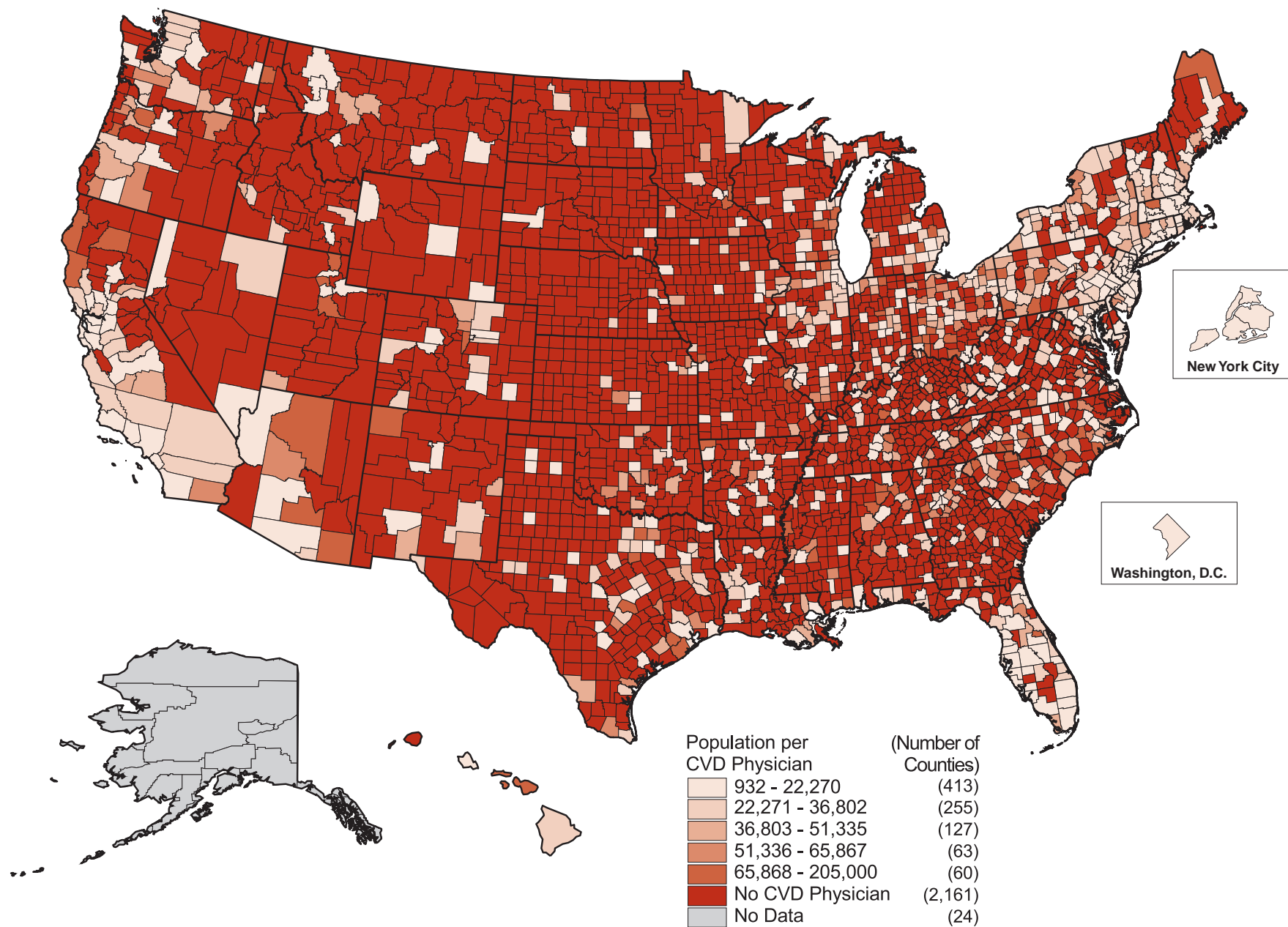
Cardiovascular disease (CVD) specialty physicians have specialized training in the diagnosis of heart disease, case management, medical and surgical treatment, and cardiac rehabilitation. Given their specialized training, the presence of CVD specialty physicians in a local community increases the availability of medical and surgical interventions for heart disease.

In 1990, 70% of the counties in the United States had no CVD specialty physicians. For many counties in the western United States, the large expanse between counties that had and did not have CVD specialty physicians posed a serious obstacle to timely and appropriate cardiac care. Patients who lived in a county with no CVD specialty physicians often faced prohibitively expensive and time-consuming travel to a physician in a distant location. States with few counties that had CVD specialty physicians in 1990 included North Dakota, South Dakota,

Iowa, Nebraska, Kansas, Wyoming, and Montana. In the South, where rural areas were more densely populated than rural areas in the West, many counties also did not have CVD physicians in 1990. Many counties in the South, Midwest, and Northeast that did have CVD specialty physicians had high population to physician ratios, indicating that these areas were underserved.

Metropolitan counties throughout the United States were more likely to have favorable population to CVD specialty physician ratios than nonmetropolitan counties. The most favorable population to physician ratios were observed in the most highly urbanized and densely populated areas of the country—namely, the eastern seaboard from Boston to Washington, DC, industrial centers of the Midwest, southern California, the San Francisco Bay area, and much of Florida.

Total Population per Cardiovascular Disease (CVD) Specialty Physician
1990



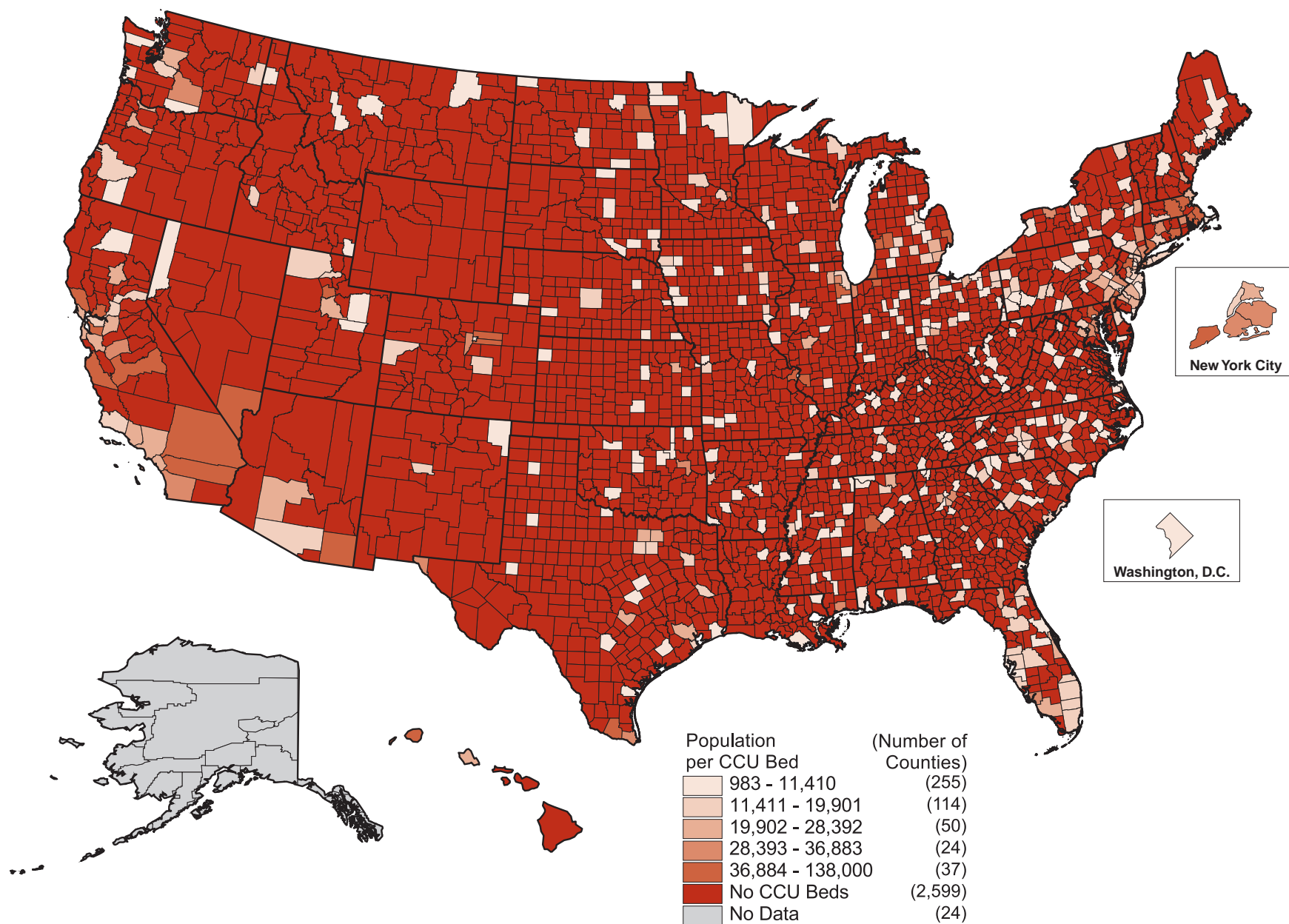
Coronary Care Unit Beds

The coronary care unit (CCU) is a vital component of medical care for acute myocardial infarction.¹ Intensive monitoring of cardiac patients for lethal arrhythmias is critical for the care of cardiac patients and has been shown to reduce hospital deaths by 30%. One method of measuring such care is through the availability of CCUs. However, in many communities where specialized CCUs are not available, cardiac patients may receive appropriate care in intensive care units equipped to conduct noninvasive monitoring of arrhythmias and invasive monitoring of arterial and pulmonary blood pressure. Trained staff and monitoring equipment should be available 24 hours per day.¹

In 1993, 84% of the counties in the United States did not have a single coronary care unit hospital bed. Large geographic expanses of the country were without coronary care units. Clusters of counties with coronary care unit beds were found in the metropolitan counties of the eastern seaboard, Florida, and north central and southern California, including Boston, New York, Philadelphia, Baltimore, and San Diego. Many of these metropolitan areas had high population to hospital bed ratios, however. The most favorable population to coronary care unit hospital bed ratios were found in several metropolitan areas, including Washington DC, Pittsburgh, Atlanta, Birmingham, San Antonio, and Reno.

¹Task Force on the Management of Acute Myocardial Infarction of the European Society of Cardiology. Acute myocardial infarction: pre hospital and in hospital management. *European Heart Journal* 1996; 17:43-63.

Total Population per Coronary Care Unit (CCU) Bed
1993



Cardiac Rehabilitation Units

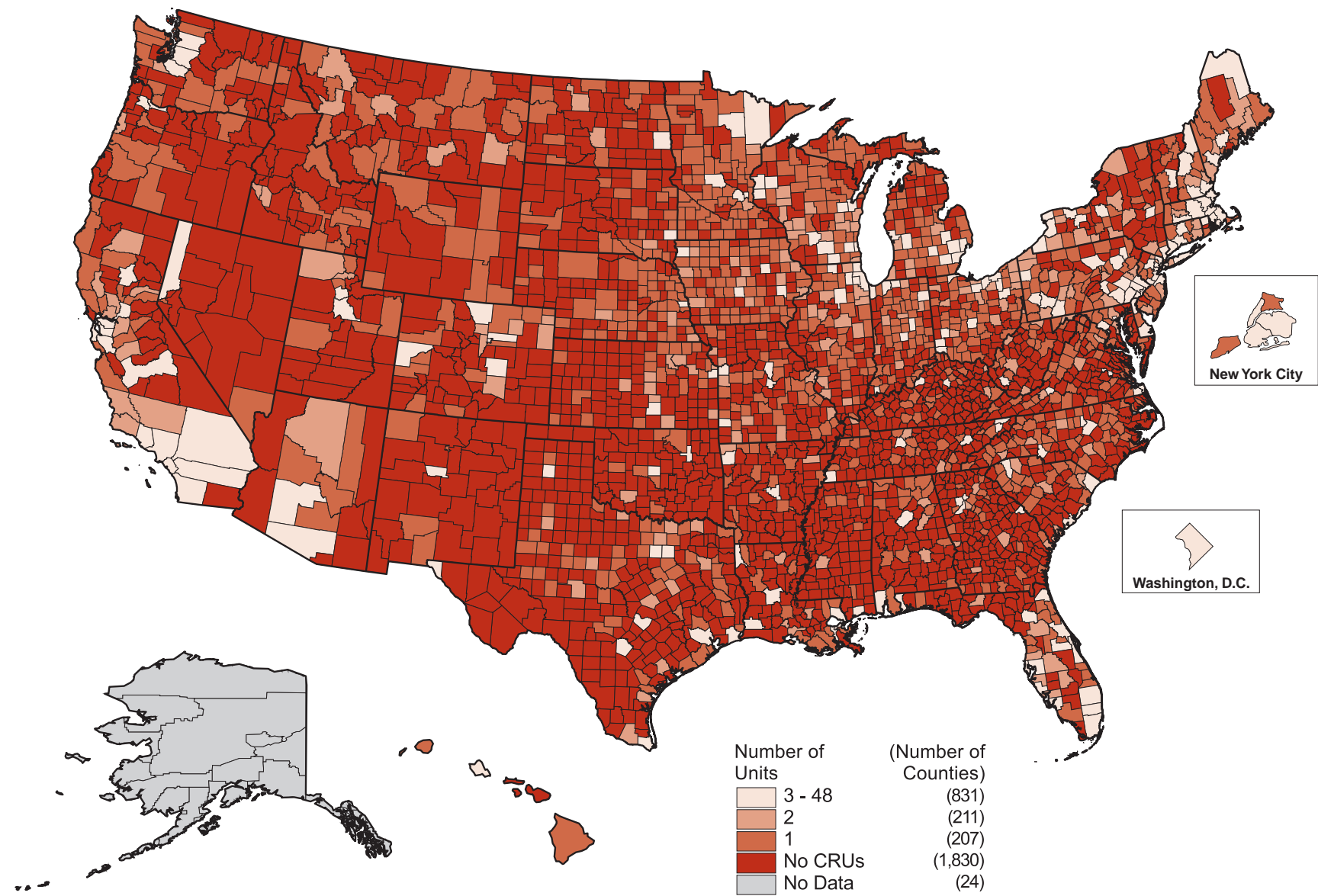
Cardiac rehabilitation units are designed to provide rehabilitative services to patients who have serious heart disease or are recovering from a heart attack. Cardiac rehabilitation services are usually provided in general hospitals, and their main purpose is to lower the risk of complications and death from heart disease.¹ The goal for many patients in cardiac rehabilitation is to develop a tailored exercise program that will work toward increasing their strength and aerobic fitness, reducing their blood pressure and cholesterol levels, and maintaining their weight loss.

Cardiac rehabilitation units serve more than one individual at a time; therefore we mapped the total number of facilities offering cardiac rehabilitation services in each county instead of using the population ratio.

In 1993, a majority (60%) of U.S. counties did not have a cardiac rehabilitation unit. Counties with no availability of cardiac rehabilitation services were clustered in the South, the West, and rural areas throughout the country. Most counties in or near major metropolitan areas such as New York, Chicago, Los Angeles, and Miami had three or more cardiac rehabilitation units. Many metropolitan areas throughout the country had at least one cardiac rehabilitation unit. The concentration of cardiac rehabilitation services in metropolitan areas as opposed to nonmetropolitan areas meant that rural residents were faced with traveling long distances to receive rehabilitative care.

¹Agency for Health Care Policy and Research Cardiac Rehabilitation. *Clinical Practice Guidelines No.17*. AHCPR Publication No. 96-0672. Rockville, MD: October 1995.

Cardiac Rehabilitation Units (CRUs)
1993



4 National Maps of Heart Disease Mortality among Women

In this section, national geographic disparities in heart disease death rates are examined for all women, Asian and Pacific Islander women, American Indian and Alaska Native women, black women, Hispanic women, and white women. Women ages 35 years and older who resided in the United States during 1991 to 1995 were the study population.

Each national map portrays spatially smoothed heart disease death rates for all counties, including Alaska, Hawaii, and the District of Columbia. Hawaii, New York City, and the District of Columbia are shown separately on each map, at a larger scale than the other states, to aid in visualization. Because of its very large land area, Alaska is shown at a smaller scale than the other states. The distribution of county heart disease death rates for each group of women was divided into quintiles (five categories with an equal number of counties) for the purposes of mapping. Counties in the highest quintile of heart disease mortality are the darkest color on the maps, while counties in the lowest quintile are the lightest color.

On the maps for African Americans, Asian and Pacific Islanders, American Indians and Alaska Natives, and Latinas, heart disease death rates were not calculated for a majority of counties nationwide. These counties are labeled “insufficient data” on the maps. In these counties and their surrounding areas, there were fewer than 20 heart disease deaths among women of the specified race or ethnic group over our five-year study period. For these areas of very low population and infrequent heart disease deaths, statistically reliable death rates could not be calculated (see Appendix B for more details).

For part of the study period, Oklahoma and New Hampshire did not collect data on Hispanic origin on death certificates. Consequently, we were unable to report heart disease death rates for Latina women in these states. During 1991-1993, “unknown” Hispanic origin was recorded on approximately 22 percent of death certificates for women ages 35 years and older in New York City. Therefore, the heart disease death rates we report for Latinas in New York City may be underestimates.

Heart Disease Mortality – All Women

Overall, women aged 35 years and older in the United States experienced a heart disease death rate of 401 per 100,000 population during 1991-1995. However, there was considerable variation in the magnitude of heart disease death rates among the 3,103 counties for which data were available. Rates for counties ranged from 212 to 670 per 100,000, and the heart disease death rate at the midpoint of the top quintile (560 per 100,000) was twice as high as the midpoint of the lowest quintile (275 per 100,000). The frequency distribution graph (Figure 4.1) illustrates the range of geographic variation in death rates. The color bar along the x-axis of the graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among all women.

On the map (opposite page) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile.

There was a clear east-west gradient in heart disease mortality among women during 1991-1995. Counties in the top two quintiles were located primarily within Appalachia, the Ohio-Mississippi River Valley, the Mississippi Delta, and the eastern

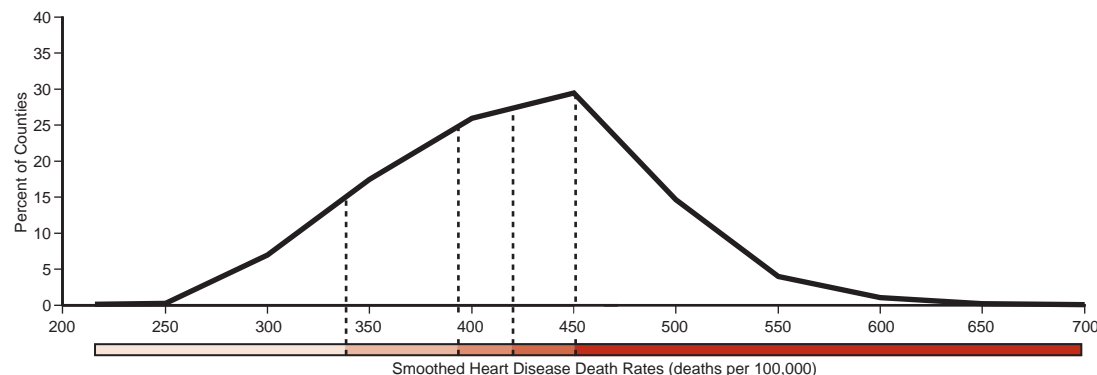
Piedmont and coastal regions of Georgia, South Carolina, and North Carolina. In Florida, the majority of counties experienced rates in the lowest two quintiles, while several of the northern counties had rates in the higher quintiles.

Most counties in the Pacific Northwest and Rocky Mountain areas of Colorado and New Mexico were in the lowest quintile. Another region of counties with low rates was in Wisconsin, North Dakota, and South Dakota. Alaskan and Hawaiian counties had rates in the lowest two quintiles. Along the border between Nevada and California and into southern California, counties had heart disease death rates in the middle quintiles.

A Note on Methods

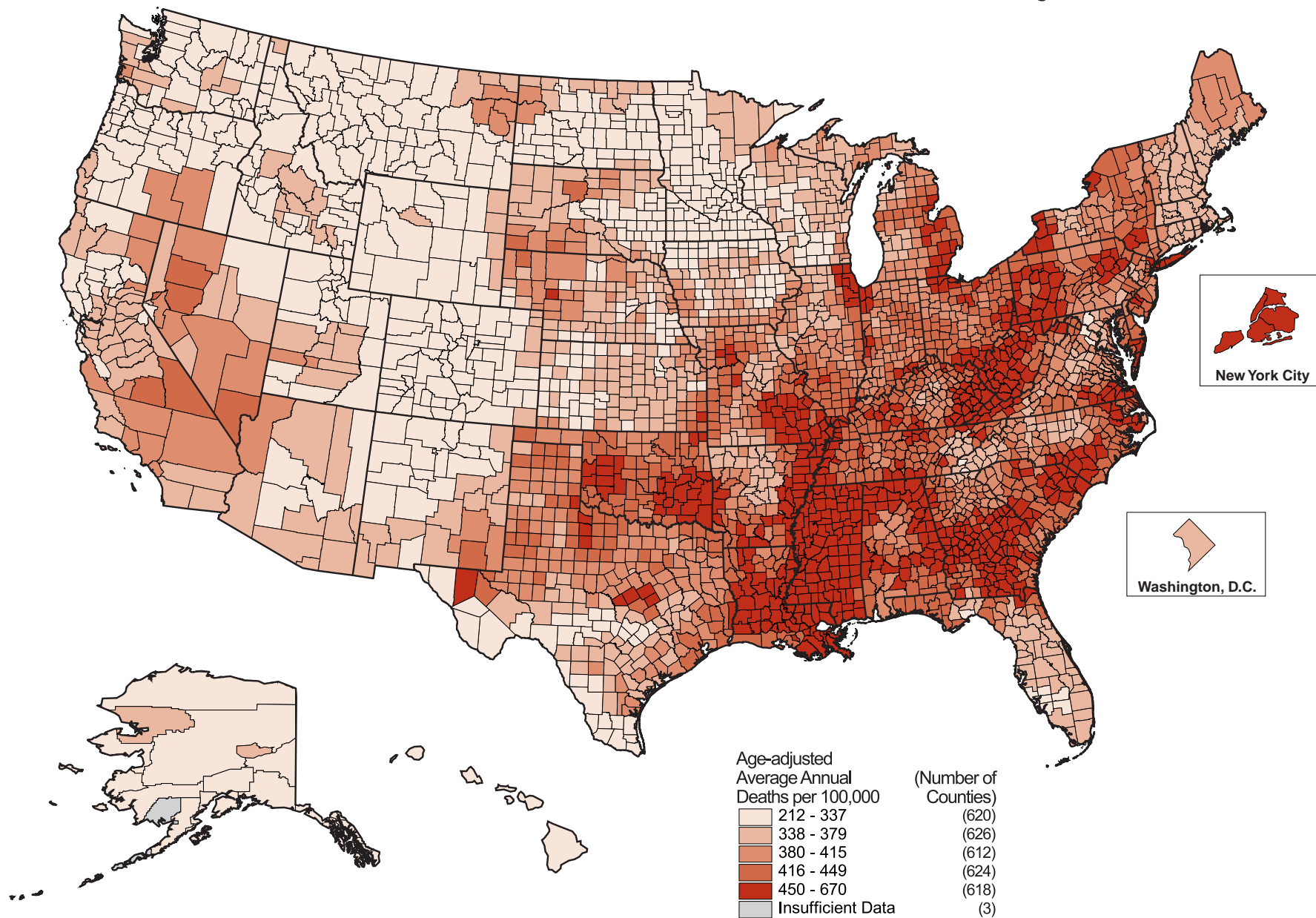
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 U.S. population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

Figure 4.1
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, All Women, Ages 35 and Older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

All Women
Ages 35 Years and Older



Heart Disease Mortality – American Indian and Alaska Native Women

American Indian and Alaska Native women comprised 0.6% of all women aged 35 years and older in the United States in 1991. For the period 1991-1995, the heart disease death rate for American Indian and Alaska Native women was 259 per 100,000 population. Considerable geographic variation in the burden of heart disease mortality was evident across the 375 counties for which data were available (Figure 4.2). Rates for counties ranged from 97 to 1,000 per 100,000. There was nearly a fivefold difference in the heart disease death rate at the midpoint of the top quintile compared with the midpoint of the lowest quintile (784 deaths per 100,000 vs. 165 deaths per 100,000). The color bar along the x-axis of the graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among American Indian and Alaska Native women.

On the map (opposite page), counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile.

The American Indian and Alaska Native population in the United States is composed of many politically and culturally distinct Tribal Nations residing both in defined rural areas (in some cases reservations with limited political sovereignty) and in urban areas (see page 41 for a map of the geographic distribution of the American Indian and Alaska Native population of women). The map of heart disease death rates among American

Indian and Alaska Native women suggests that risk for heart disease varies greatly among the different Tribal Nations. Low rates of heart disease mortality were found in large metropolitan counties and surrounding areas (New York City, San Francisco, Los Angeles, Seattle, Anchorage). Low rates of heart disease mortality were also experienced by women in Oklahoma (predominantly Cherokee Nation) and New Mexico (predominantly Navajo Nation). High rates of heart disease mortality were experienced by women in South Dakota (predominantly Dakota Nation), Montana, and Minnesota (predominantly Chippewa Nation). An area of southeastern North Carolina is home to a large group of Lumbee Indians, who are not a federally recognized tribe. American Indian women in this area also experienced high rates of heart disease mortality.

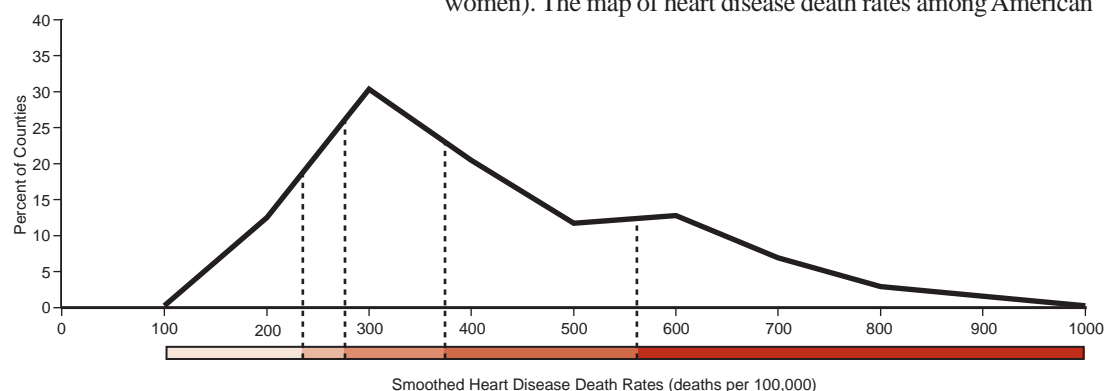
A Note on Methods

Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

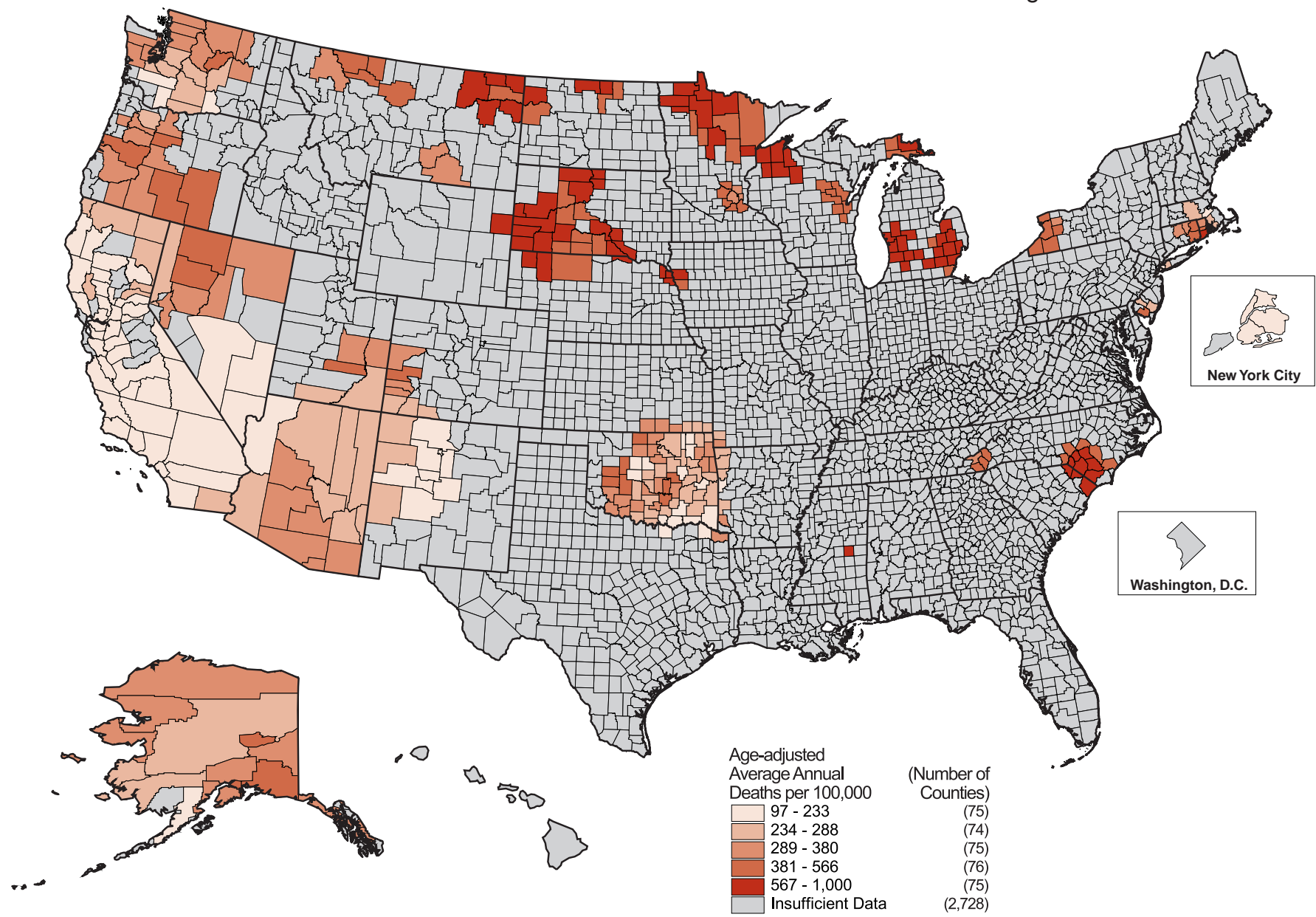
The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that certain racial and ethnic minorities are sometimes misreported as “white” on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among American Indian and Alaska Native women could not be included in the data analyses for this report. Consequently, the true heart disease death rates for American Indian and Alaska Native women were probably higher during 1991-1995 than indicated in Figures 4.2 and the map. In addition, if misreporting of race on death certificates were a greater problem in certain parts of the country than in others, then the geographic patterns presented here could be biased.

Figure 4.2
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, American Indian and Alaska Native Women, Ages 35 and Older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

American Indian and Alaska Native Women
Ages 35 Years and Older



Heart Disease Mortality – Asian and Pacific Islander Women

The heart disease death rate among Asian and Pacific Islander women aged 35 years and older during 1991-1995 was 221 per 100,000. Asian and Pacific Islander women comprised 2.7% of all women in this age group in 1991. There were 275 counties for which there were sufficient data to calculate heart disease death rates for Asian and Pacific Islander women. There was a substantial difference in the level of heart disease mortality between the counties in the highest and lowest quintiles. The heart disease death rate at the midpoint of the top quintile (261 per 100,000) was two times higher than the midpoint of the bottom quintile (124 per 100,000). Rates for counties ranged from 94 to 295 per 100,000 (Figure 4.3). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in heart disease death rates among Asian and Pacific Islander women.

On the map (opposite page) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile.

With the exception of Hawaii, the overwhelming majority of Asian and Pacific Islander women in the United States resided in metropolitan areas during 1991-1995 (see page 43 for the geographic distribution of the Asian and Pacific Islander population of women). Low rates of heart disease mortality were observed for the Houston, Dallas, and San Antonio metropolitan areas of Texas; central and southern Florida; northern New Jer-

sey; Connecticut, and the Boston, Minneapolis, and Chicago metropolitan areas. High rates of heart disease mortality were experienced by Asian and Pacific Islander women in New York City, most of California, southern Arizona, Salt Lake City, St. Louis, and Atlanta. Asian and Pacific Islander women in Washington, DC and Cleveland experienced intermediate-level heart disease death rates.

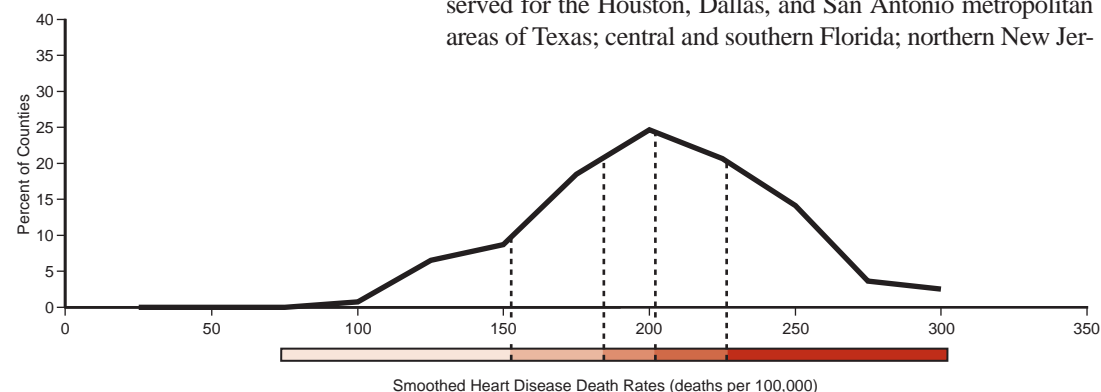
A Note on Methods

Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

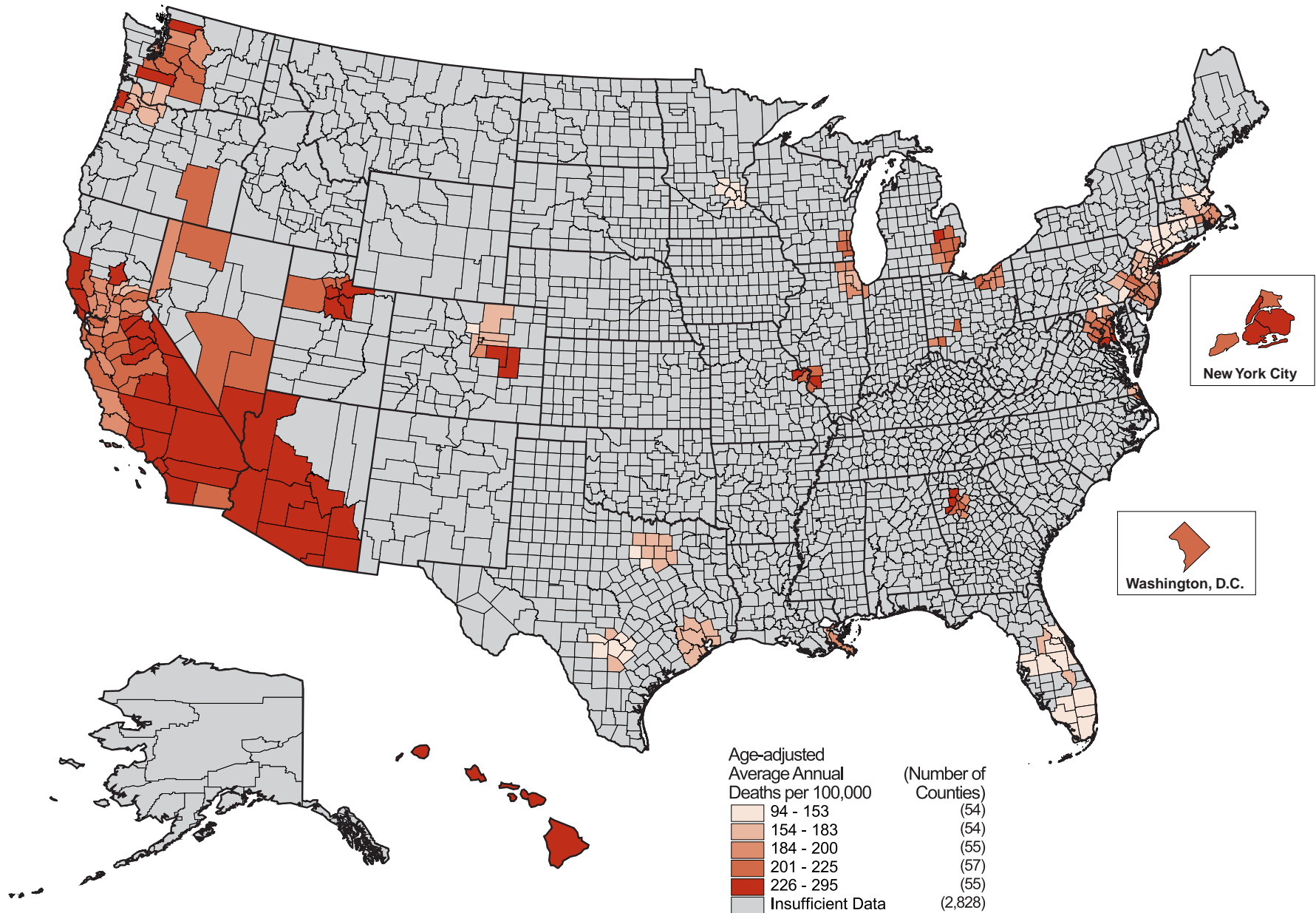
The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that certain racial and ethnic minorities are sometimes misreported as “white” on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among Asian and Pacific Islander women could not be included in the data analyses for this report. Consequently, the true heart disease death rates for Asian and Pacific Islander women were probably higher during 1991-1995 than shown in Figures 4.3 and the map. In addition, if misreporting of race on death certificates were a greater problem in certain parts of the country than in others, then the geographic patterns presented here could be biased.

Figure 4.3
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, Asian and Pacific Islander Women, Ages 35 and Older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

Asian and Pacific Island Women
Ages 35 Years and Older



Heart Disease Mortality – Black Women

Blacks were the largest racial and ethnic minority group among women aged 35 years and older in 1991, comprising 10.5% of all women. Overall, African American women experienced a heart disease death rate of 553 per 100,000 during 1991-1995. However, the 1,930 counties for which sufficient data were available exhibited considerable variation in the magnitude of heart disease death rates for black women. Rates for counties ranged from 124 to 1,275 per 100,000 (Figure 4.4), and the heart disease death rate at the midpoint of the top quintile (973 per 100,000) was three times higher than the rate at the midpoint of the bottom quintile (133 per 100,000). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in women's heart disease death rates.

On the map (opposite page) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile.

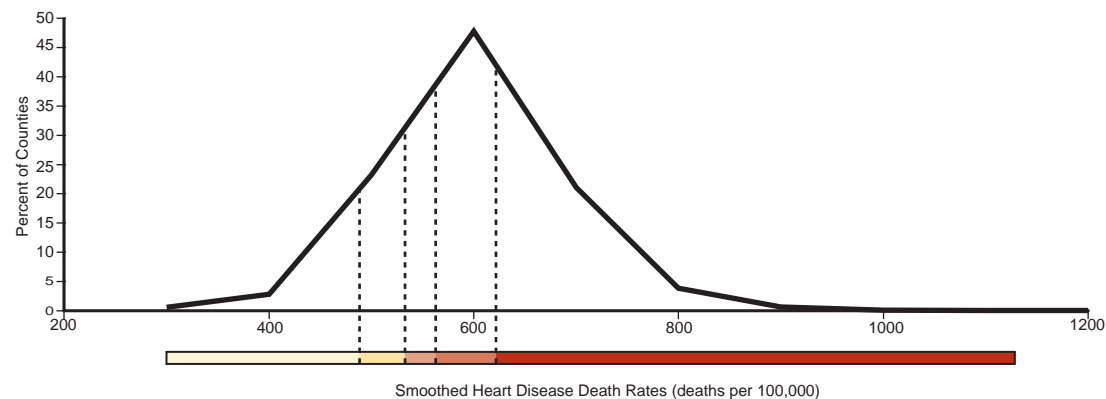
centrated primarily in the southern portion of the Mississippi River Valley and Delta region. High heart disease death rates were also found in some counties in California, Oklahoma, Texas, and the Detroit and Chicago metropolitan areas. Black women experienced the lowest heart disease death rates in the District of Columbia, Minneapolis, Denver, and Albuquerque metropolitan areas, and in parts of New England and the Pacific Northwest.

A Note on Methods

Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

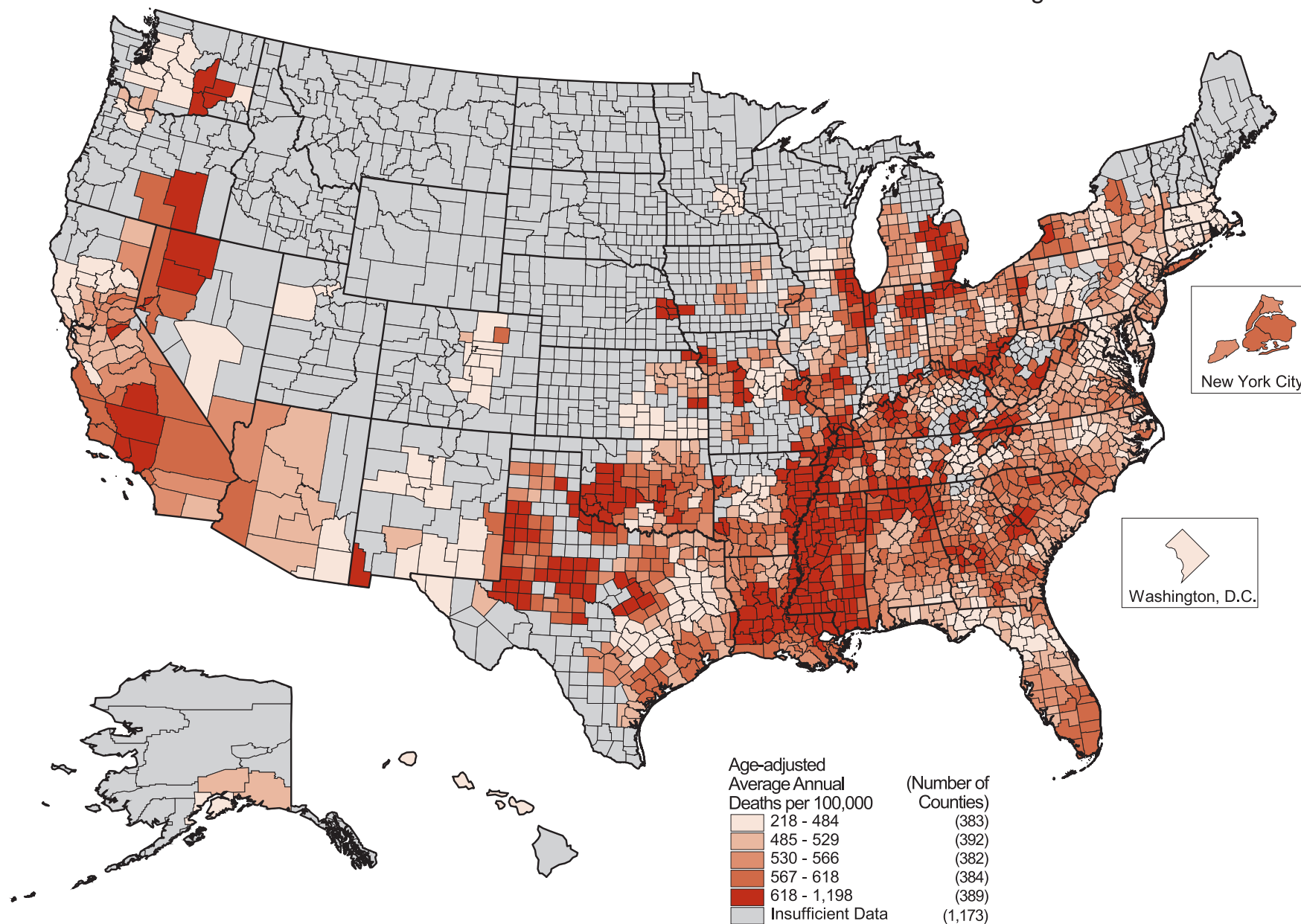
Figure 4.4
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, Black Women, Ages 35 and Older, 1991-1995

The map of heart disease mortality among African American women indicates that the counties in the top quintile are con-



Smoothed County Heart Disease Death Rates
1991-1995

Black Women
Ages 35 Years and Older



Heart Disease Mortality – Hispanic Women

Latinas were the second largest racial and ethnic minority group among women aged 35 years and older in 1991, comprising 6.1% of all women. For the period 1991-1995, the heart disease death rate for Hispanic women was 265 per 100,000 population. Considerable geographic variation in the burden of heart disease mortality was evident across the 718 counties for which data were sufficient to calculate a rate (Figure 4.5). Rates for counties ranged from 82 to 656 per 100,000. There was nearly a fourfold difference in the heart disease death rate at the midpoint of the top quintile compared with the midpoint of the lowest quintile (481 deaths per 100,000 and 131 deaths per 100,000). The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in women's heart disease death rates.

On the map (opposite page) counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile

The Latina population in the United States is concentrated in both rural (predominantly Southwest) and urban/metropolitan areas (see page 47 for the geographic distribution of the Hispanic population on women). The map of heart disease death rates among Latina women shows marked geographic variation. Low rates of heart disease mortality were experienced by women in northern California and the Pacific Northwest, most

of Florida, and in the Boston, Pittsburgh, Cleveland, Washington-Baltimore, Atlanta, and New Orleans metropolitan areas. The highest rates of heart disease mortality were experienced by women in New York City, eastern Pennsylvania, Miami, and in the rural areas of Texas, New Mexico, Arizona, Colorado, and California. Hispanic women in metropolitan areas of the Southwest such as Houston, Dallas, Albuquerque, and San Diego experienced intermediate-level heart disease mortality rates.

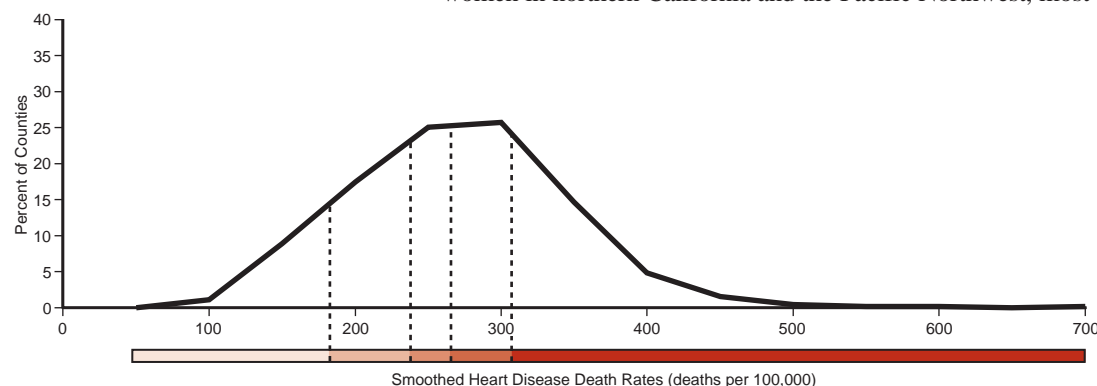
A Note on Methods

Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 United States population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

A Cautionary Note

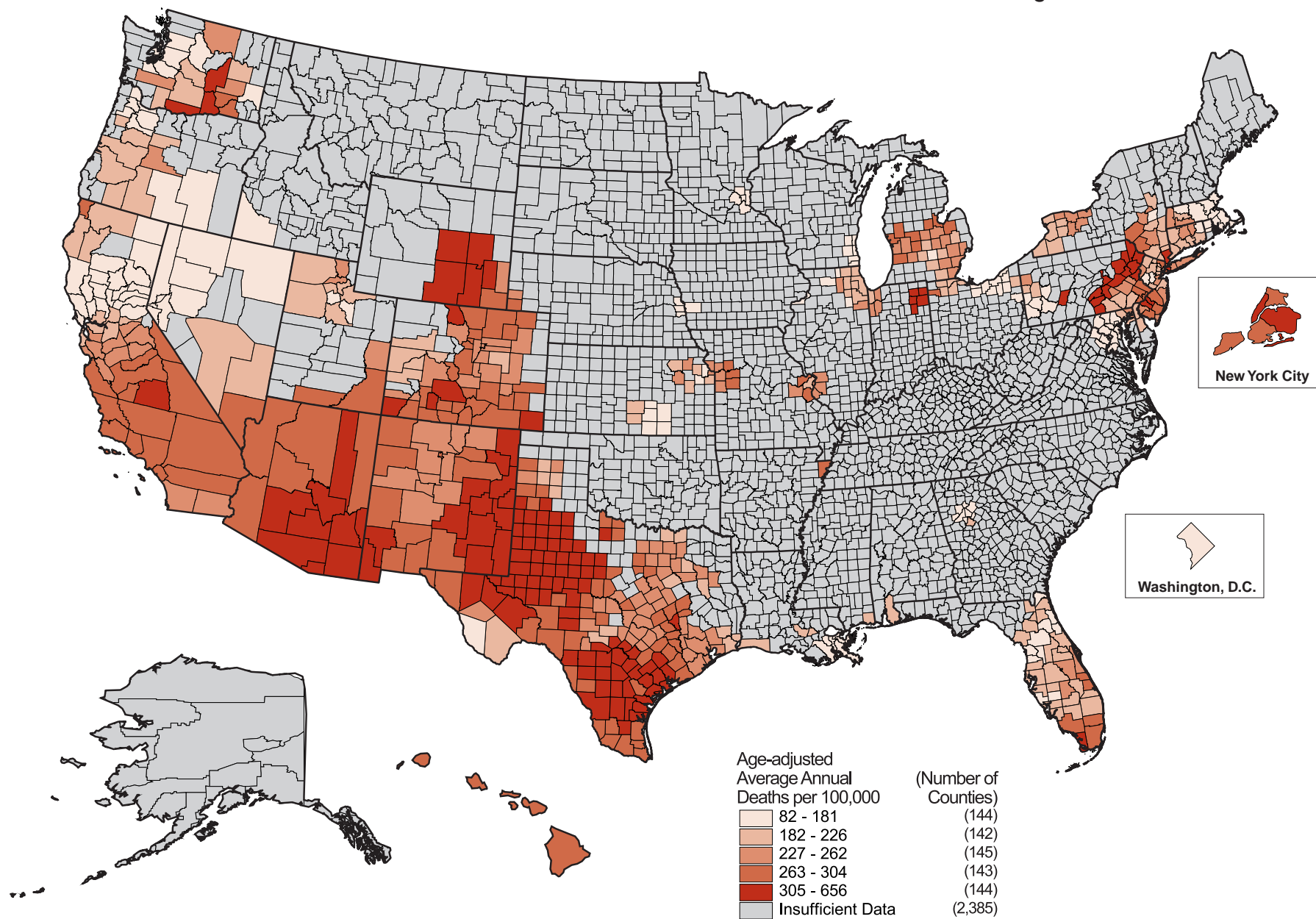
The race and ethnicity of decedents are not always reported accurately on death certificates. Validation studies have shown that Hispanics are sometimes misreported as non-Hispanic on death certificates (see page 21). Therefore, an unknown proportion of heart disease deaths among Latina women could not be included in the data analyses for this report. In New York City, approximately 22% of death certificates for women ages 35 and older recorded Hispanic origin as “unknown” during 1991-1993. Consequently, the true heart disease death rates for Hispanic women were probably higher during 1991-1995 than shown in Figures 4.5 and this map. In addition, if misreporting of Hispanic origin on death certificates was a greater problem in certain parts of the country, then the geographic patterns presented here could be biased.

Figure 4.5
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, Hispanic Women, Ages 35 and Older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

Hispanic Women
Ages 35 Years and Older



Heart Disease Mortality – White Women

White women comprised 86.3% of all women aged 35 years and older in 1991. Overall, the heart disease death rate among white women was 388 per 100,000 for the period 1991-1995. Substantial geographic variation in heart disease death rates was observed among the 3,096 counties for which sufficient data were available to calculate rates. There was a substantial difference in the level of heart disease mortality between the counties in the highest and lowest quintiles (Figure 4.6). The heart disease death rate at the midpoint of the top quintile (514 per 100,000) was nearly two times higher than the midpoint of the bottom quintile (273 per 100,000). Rates for counties ranged from 212 to 591 per 100,000. The color bar along the x-axis of the frequency distribution graph shows the range of values for each of the five groups used for mapping the geographic variation in women's heart disease death rates.

On the map (opposite page), counties were divided into five groups (quintiles) with an approximately equal number of counties in each group. The colors were graded so that counties of the darkest color were in the highest-rate quintile, and counties of the lightest color were in the lowest-rate quintile.

A clear east-west gradient in heart disease death rates among white women was evident for 1991-1995, with the highest rates occurring predominantly in the eastern portion of the United States and the lowest rates occurring predominantly in the western section. Counties in the top two quintiles were located

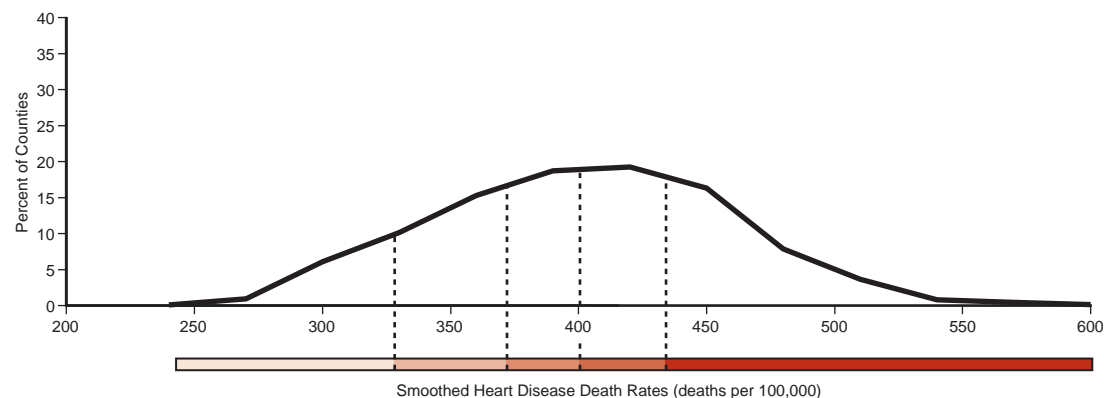
primarily within much of Appalachia, the Mississippi-Ohio River Valley, Mississippi Delta, and Piedmont and coastal regions of Georgia, South Carolina, and North Carolina. In Florida, most counties had rates in the bottom two quintiles but several northern counties had rates in the higher quintiles.

Large sections of the northwestern states south through Colorado and New Mexico had counties in the lowest quintile of heart disease mortality. Another area of counties with low rates was in Wisconsin, North Dakota, and South Dakota. Alaska and Hawaii both had counties in the lower quintiles. Along the border between Nevada and California and in southern California, intermediate levels of heart disease mortality among white women were observed.

A Note on Methods

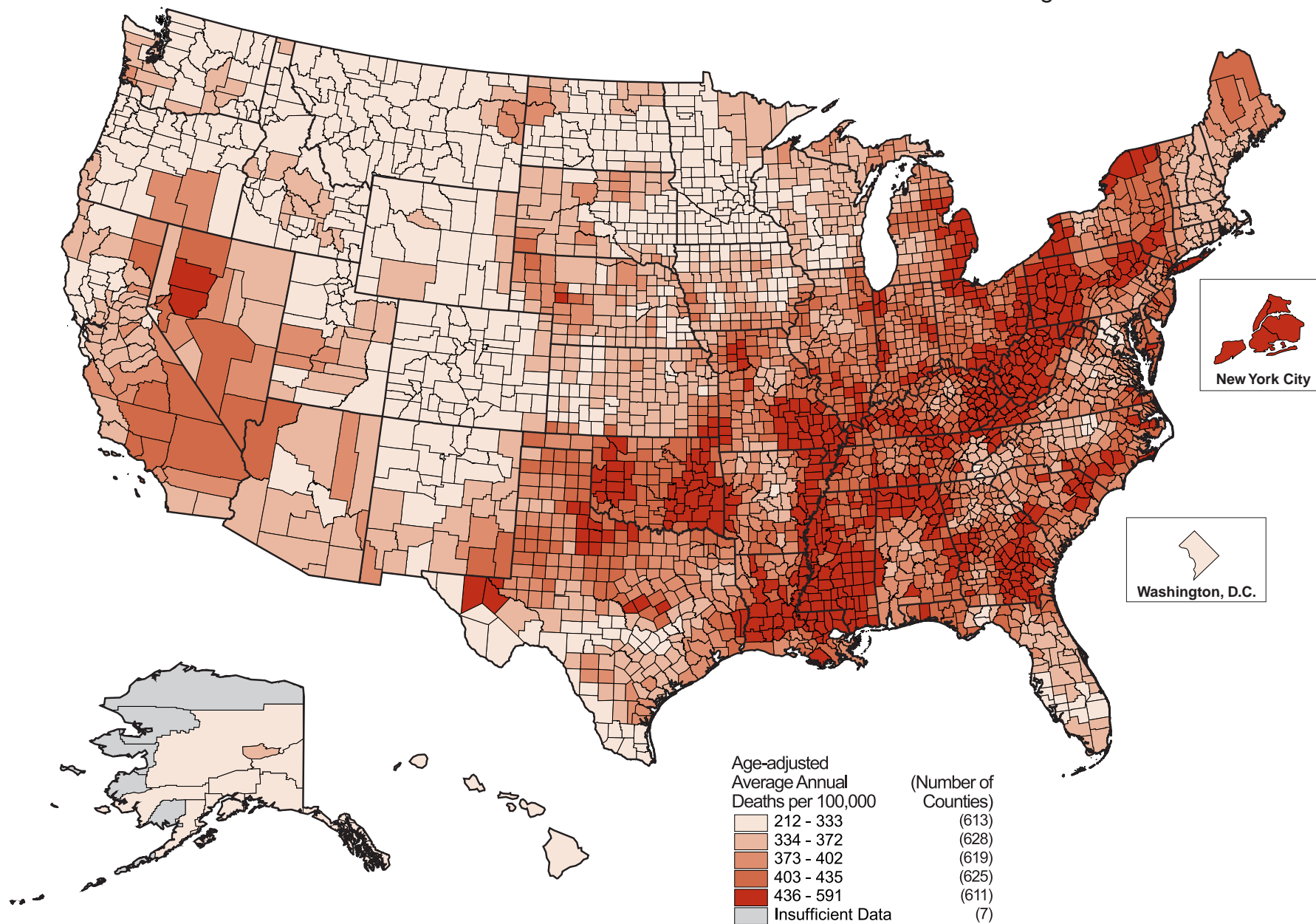
Heart disease deaths were defined as those for which the underlying cause of death listed on the death certificate was “diseases of the heart,” defined according to the International Classification of Diseases, Ninth Revision (codes 390-398, 402, and 404-429). Heart disease death rates were age-adjusted, with the 1970 U.S. population used as the standard, and spatially smoothed by using a spatial moving average. A detailed explanation of the methods used to generate these death rates and create the map can be found in Appendix B.

Figure 4.6
Frequency Distribution of Smoothed Heart Disease Death Rates for Counties, White Women, Ages 35 and Older, 1991-1995



Smoothed County Heart Disease Death Rates
1991-1995

White Women
Ages 35 Years and Older



5 State Maps of Heart Disease Mortality among Women

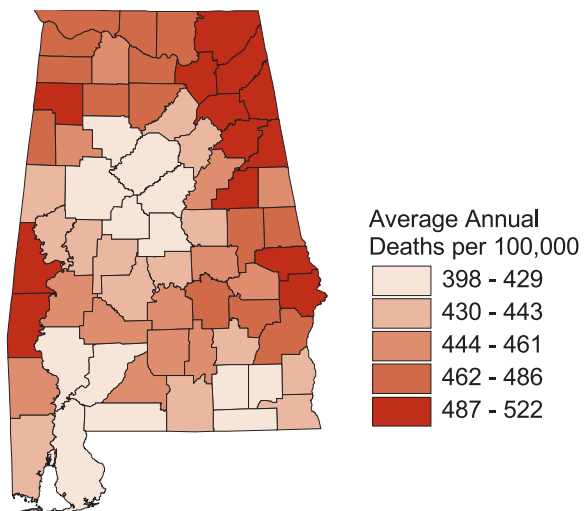
In this section, county heart disease death rates are presented separately for each state, the District of Columbia, and New York City. Separate maps are presented for all women, and for each racial and ethnic group for whom sufficient data were available to calculate rates. A map for a particular racial or ethnic group is presented if there were sufficient data to calculate smoothed heart disease death rates for at least two of the counties in that state. Therefore, states may have as few as two maps, one for all women and one for white women (e.g. Idaho), or as many as six maps (e.g. California). The heart disease death rates on each map are spatially smoothed, and there are separate legend cutpoints (quintiles) for each separate map.

For each state, we also provide a summary table containing state-level population totals and heart disease death rates for

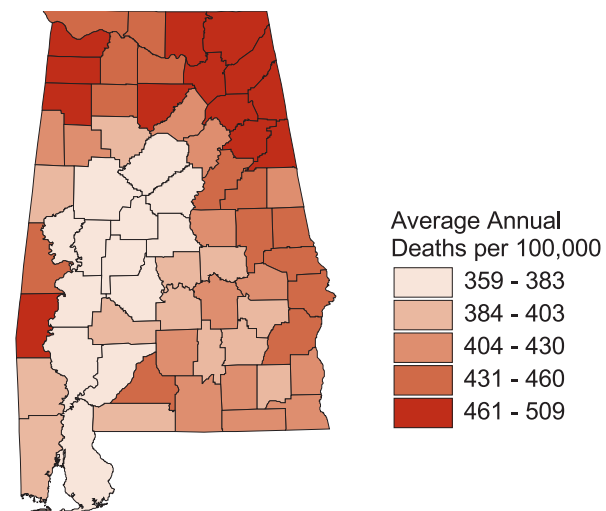
all women and for each racial and ethnic group. While the population totals are for 1995 only, the state heart disease death rates were calculated for the study period, 1991-1995. In addition, the state heart disease death rates presented in the tables were not spatially smoothed.

For part of the study period, 1991-1995, Oklahoma and New Hampshire did not collect data on Hispanic origin on death certificates. Consequently, we were unable to report heart disease death rates for Hispanic women in these states. During 1991-1993, “unknown” Hispanic origin was recorded on approximately 22% of heart disease death certificates for women ages 35 years and older in New York City. Therefore, the heart disease death rates we report for Hispanics in New York City may be underestimates.

All Women



White Women

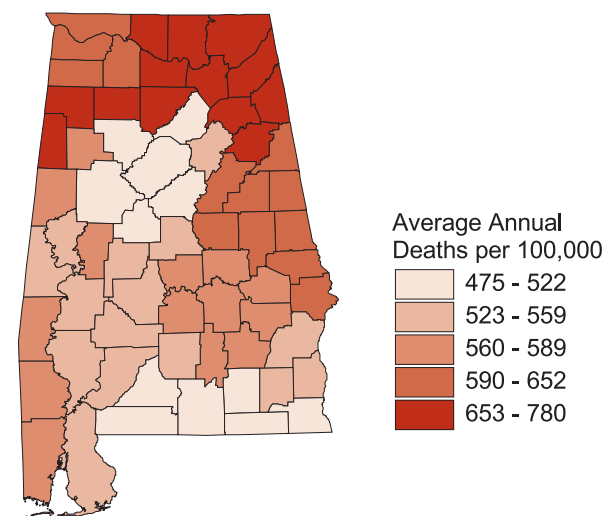


State Profile — Alabama

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,136,130	445
American Indian and Alaska Native Women	3,557	Insufficient Data
Asian and Pacific Islander Women	5,945	Insufficient Data
Black Women	254,021	552
Hispanic Women	5,448	273
White Women	872,607	419

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

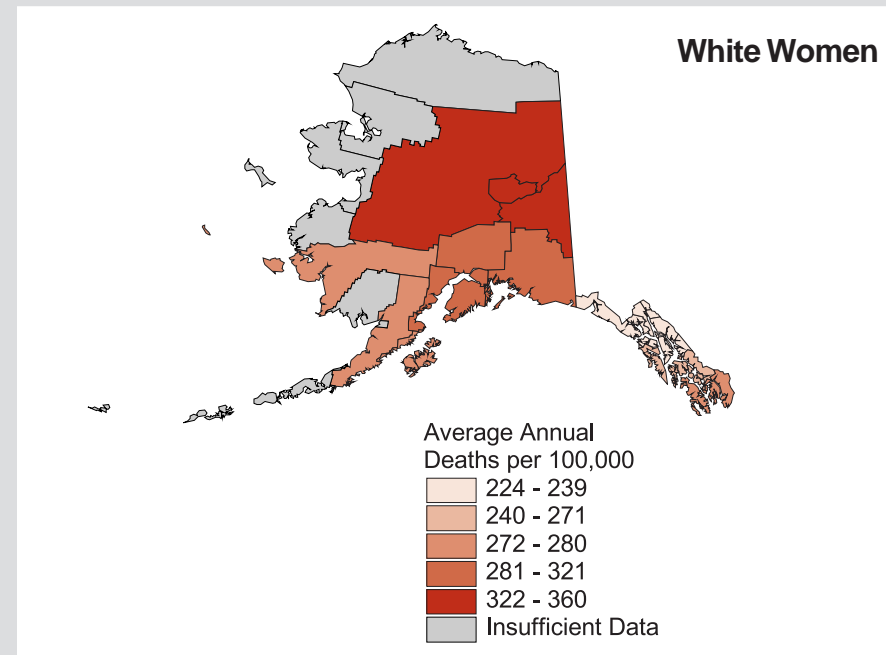
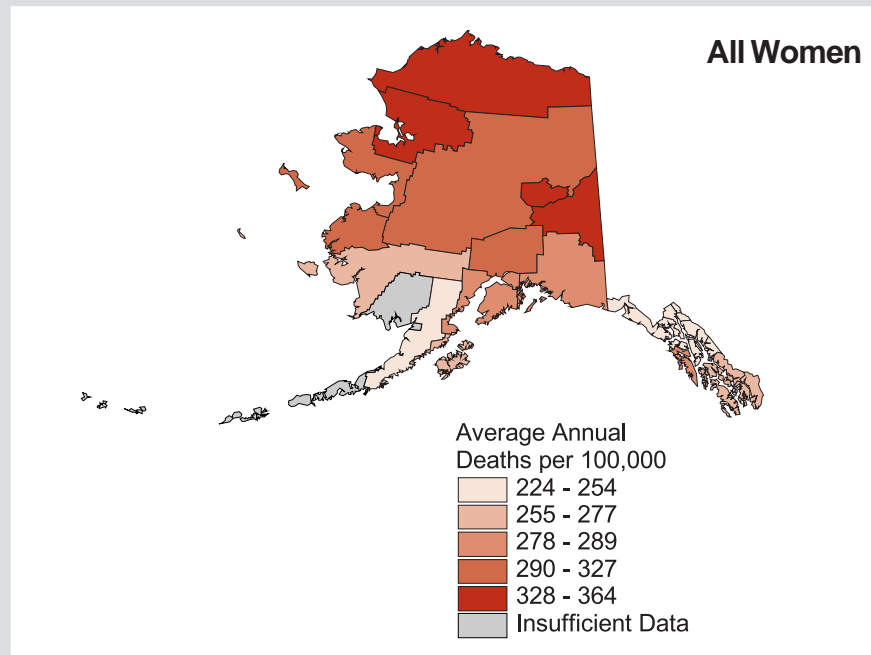


Restaurant workers in Washington, DC.



Donna DeCesare, Impact Visuals

Smoothed County Heart Disease Death Rates, 1991-1995

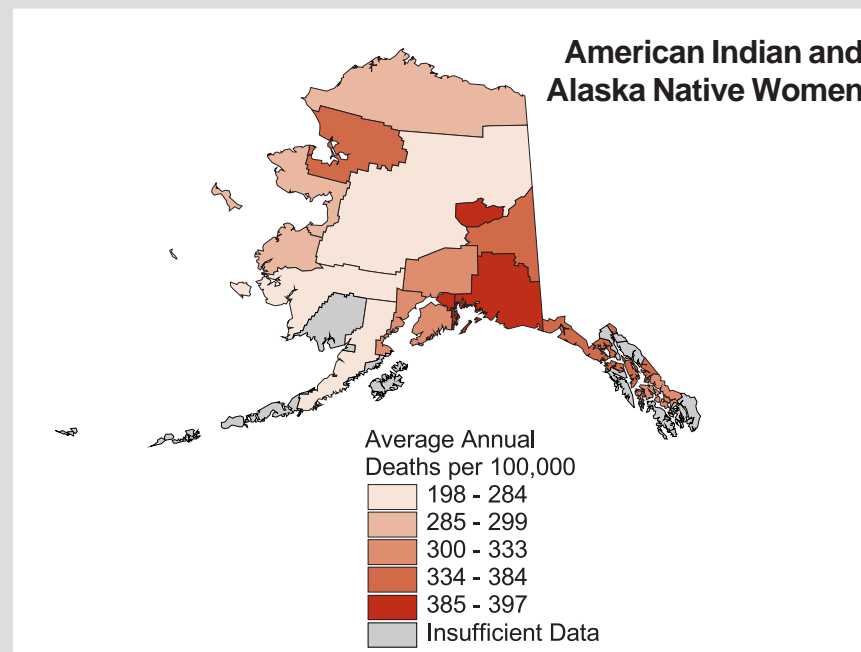
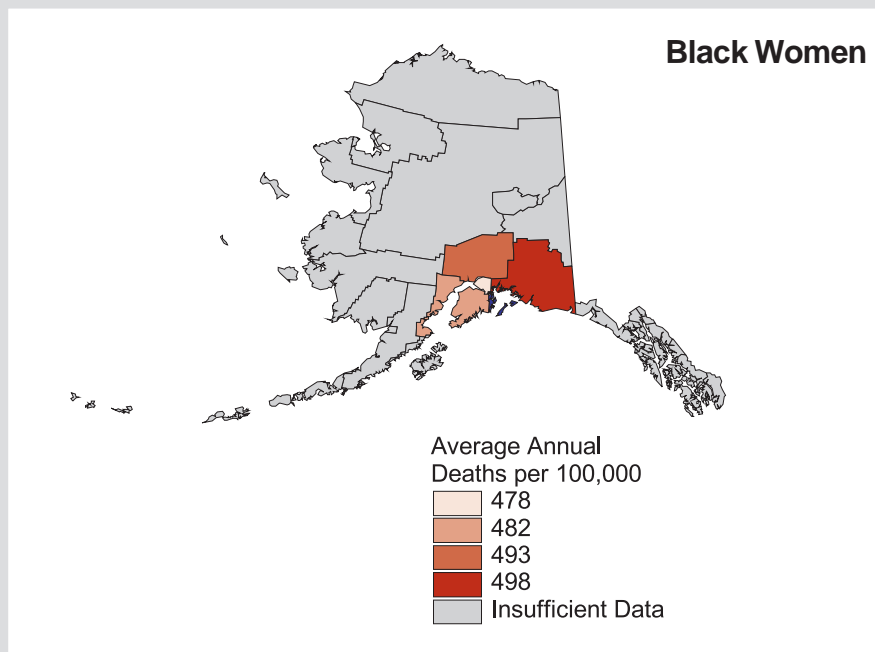


State Profile — Alaska

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	122,878	285
American Indian and Alaska Native Women	15,407	308
Asian and Pacific Islander Women	5,816	Insufficient Data
Black Women	3,580	439
Hispanic Women	3,331	Insufficient Data
White Women	98,075	285

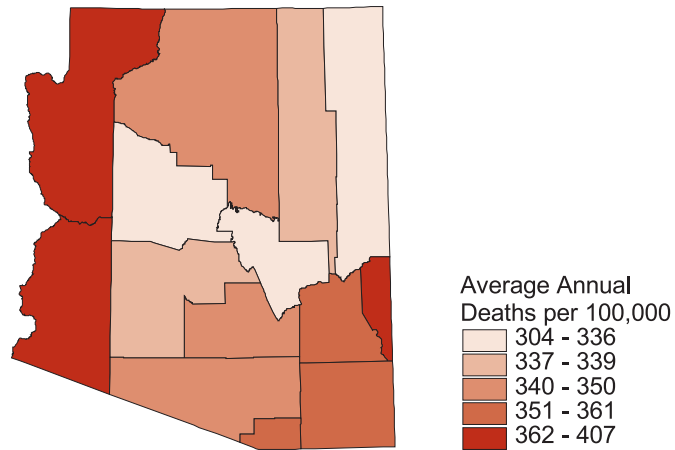
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

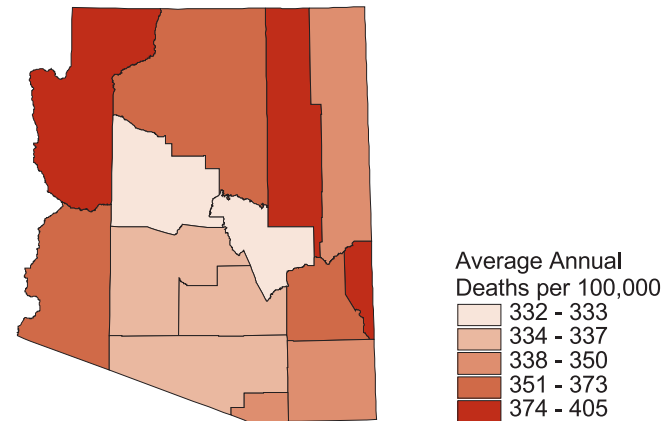


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

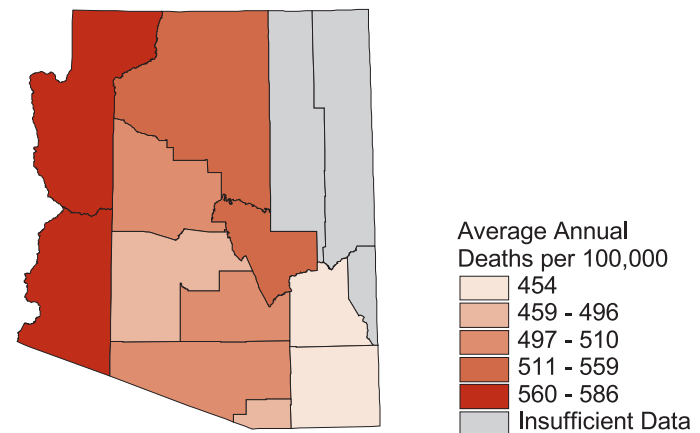


State Profile — Arizona

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,087,171	339
American Indian and Alaska Native Women	40,739	286
Asian and Pacific Islander Women	18,275	241
Black Women	27,332	492
Hispanic Women	146,710	319
White Women	1,000,825	338

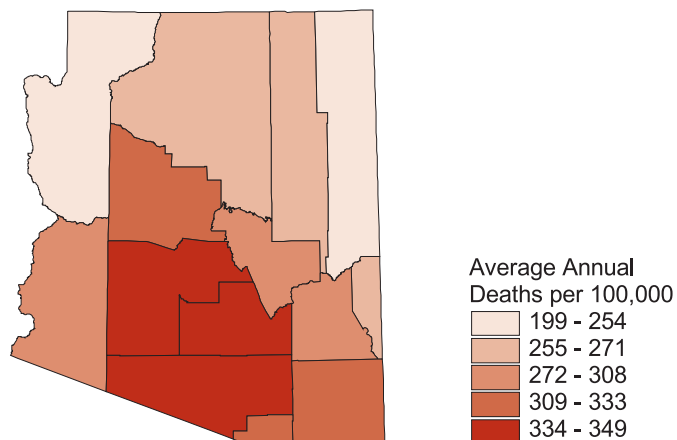
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

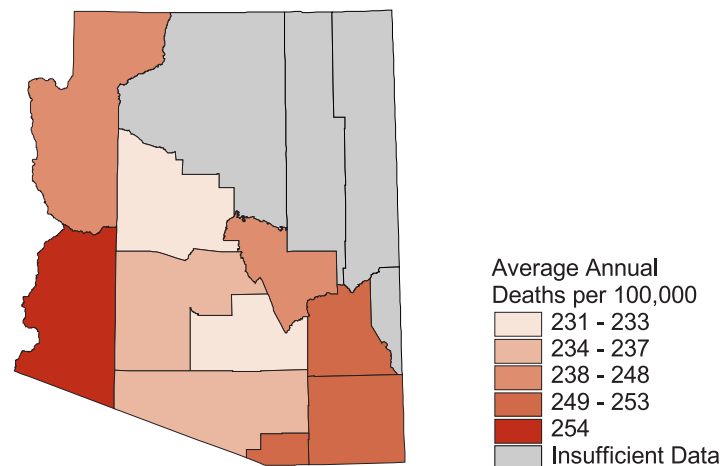


Smoothed County Heart Disease Death Rates, 1991-1995

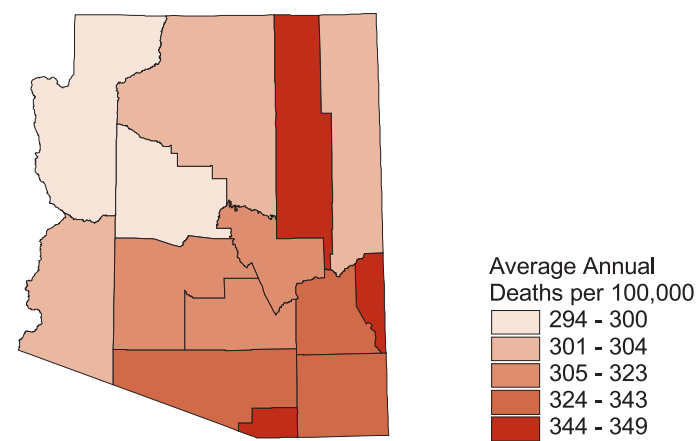
American Indian and Alaska Native Women



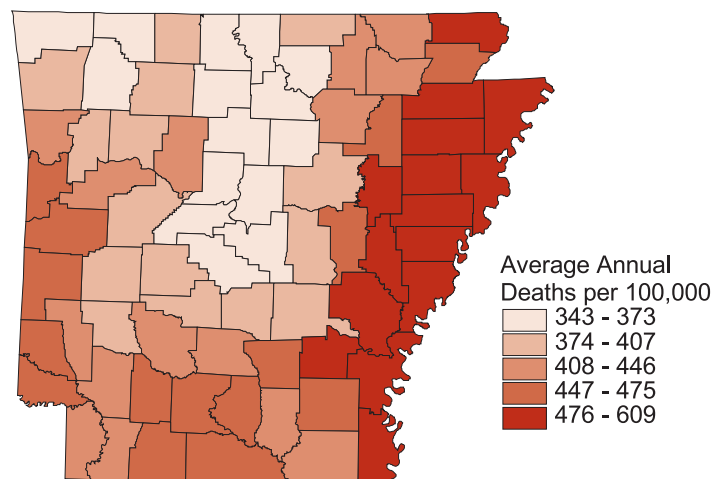
Asian and Pacific Islander Women



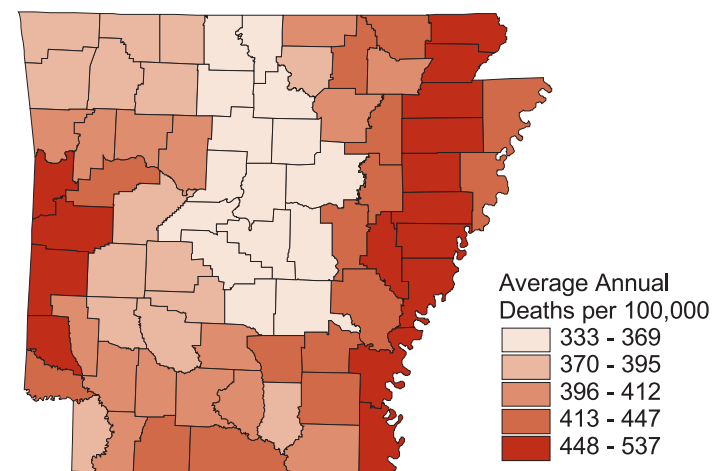
Hispanic Women



All Women



White Women



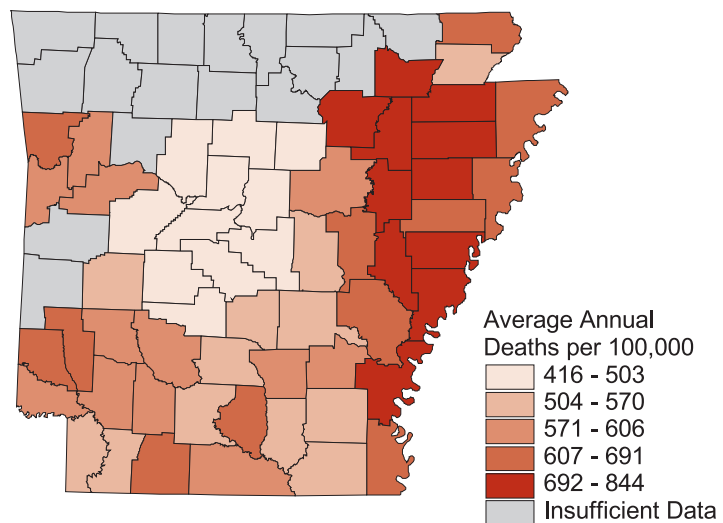
State Profile — Arkansas

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	667,464	413
American Indian and Alaska Native Women	2,948	Insufficient Data
Asian and Pacific Islander Women	3,351	Insufficient Data
Black Women	86,422	576
Hispanic Women	4,663	183
White Women	574,743	393

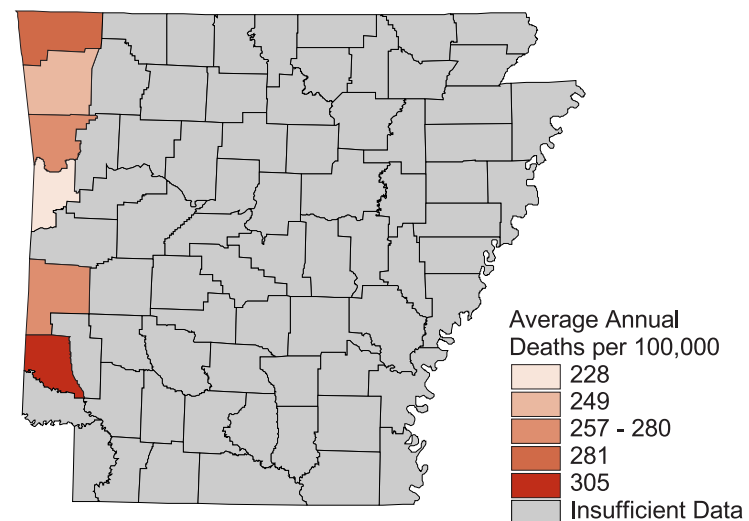
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

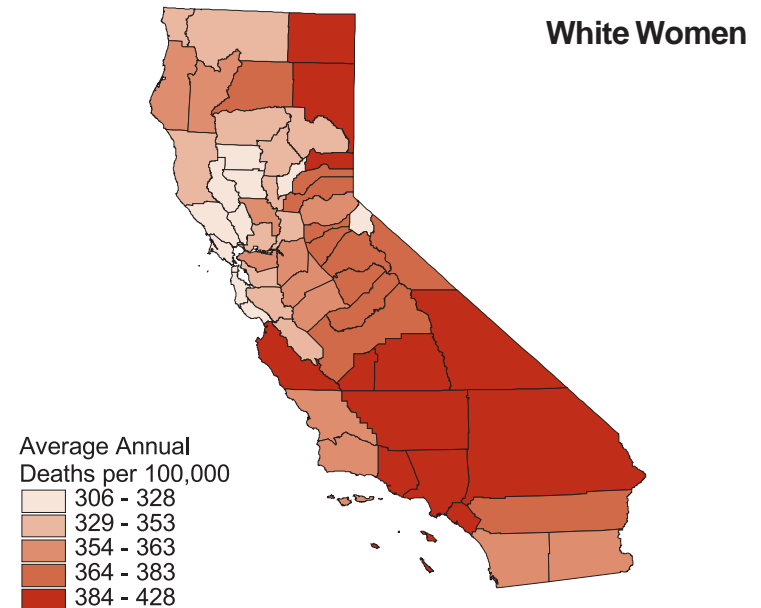
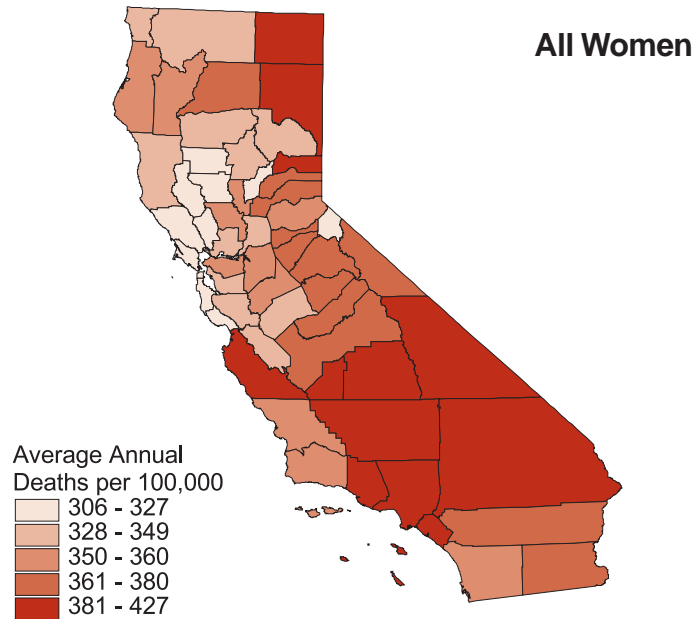
Black Women



American Indian and Alaska Native Women



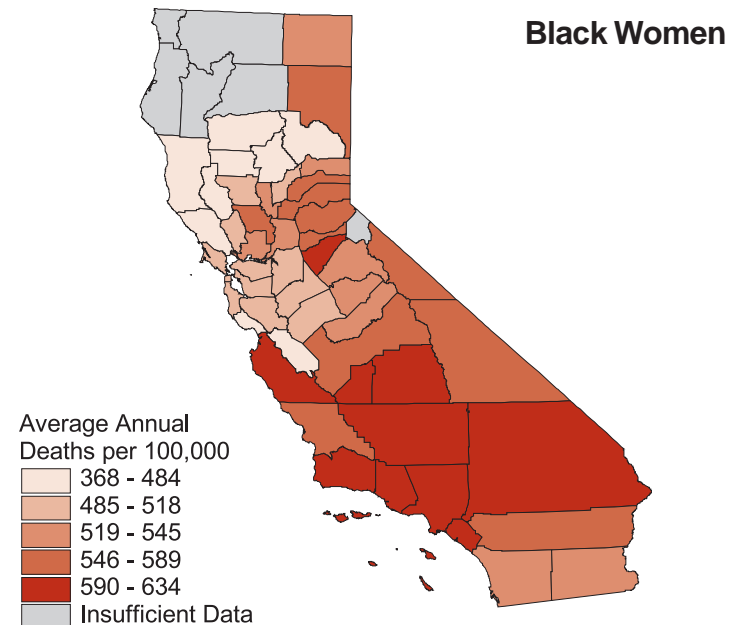
Smoothed County Heart Disease Death Rates, 1991-1995



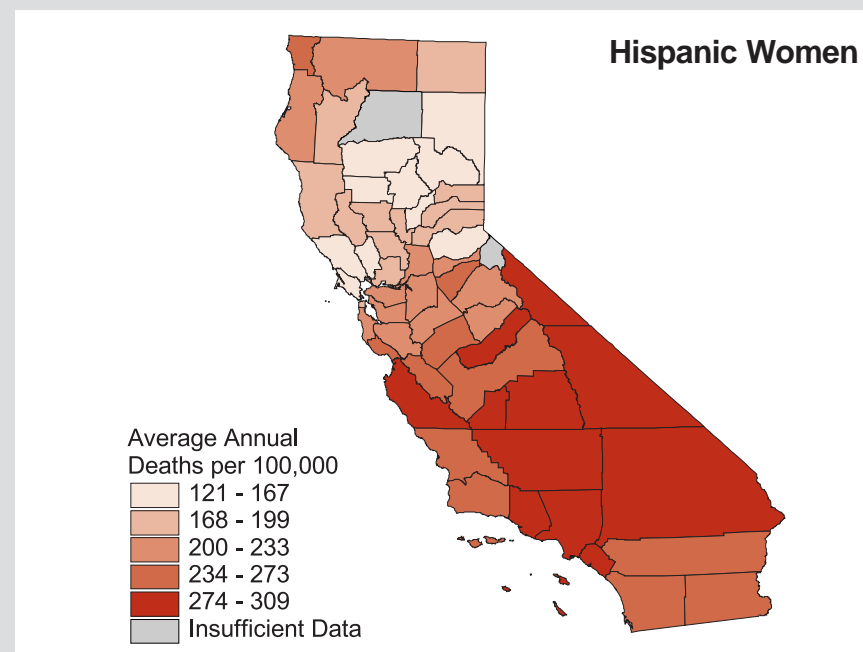
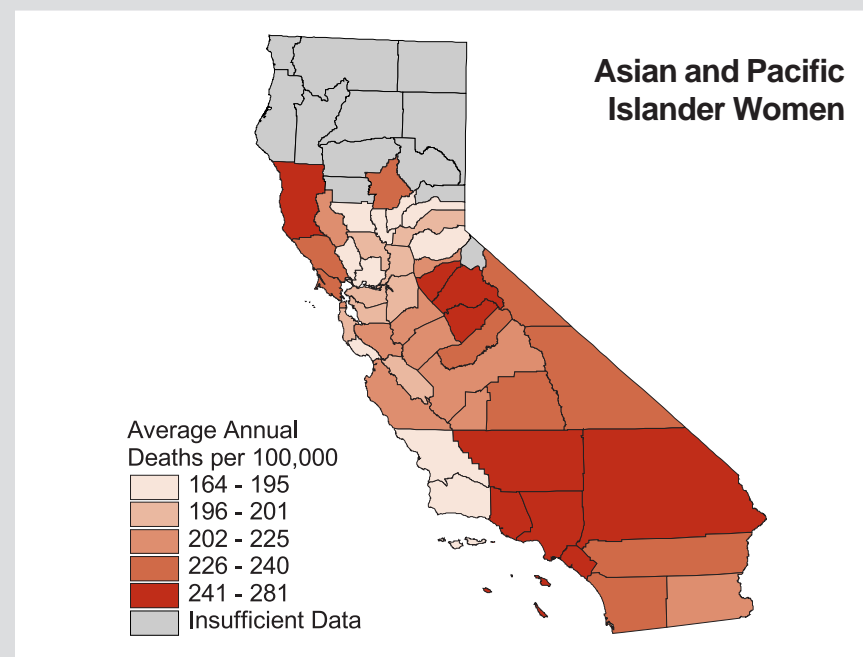
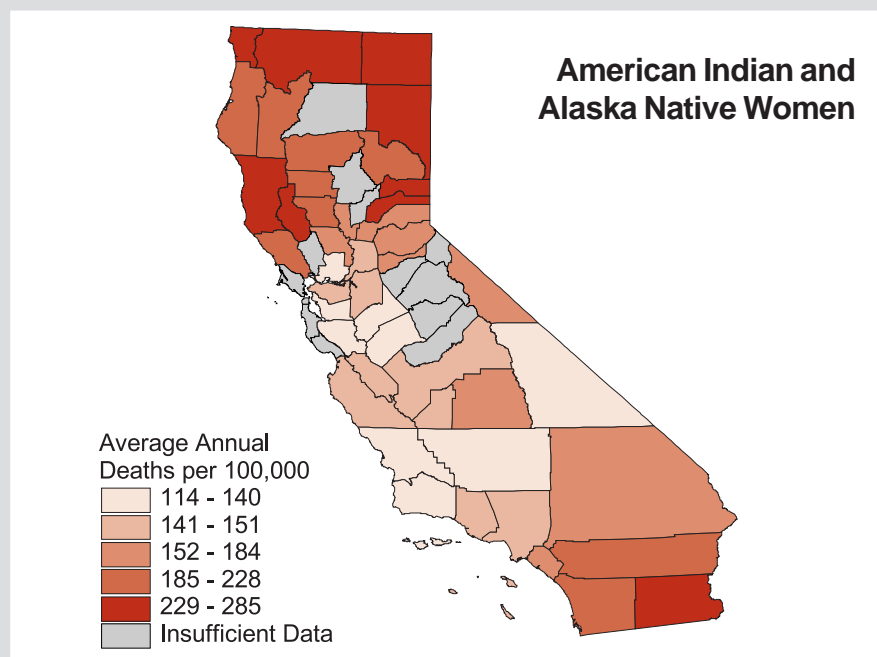
State Profile — California

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	7,455,185	373
American Indian and Alaska Native Women	63,648	161
Asian and Pacific Islander Women	826,450	221
Black Women	510,022	574
Hispanic Women	1,418,037	260
White Women	6,055,065	372

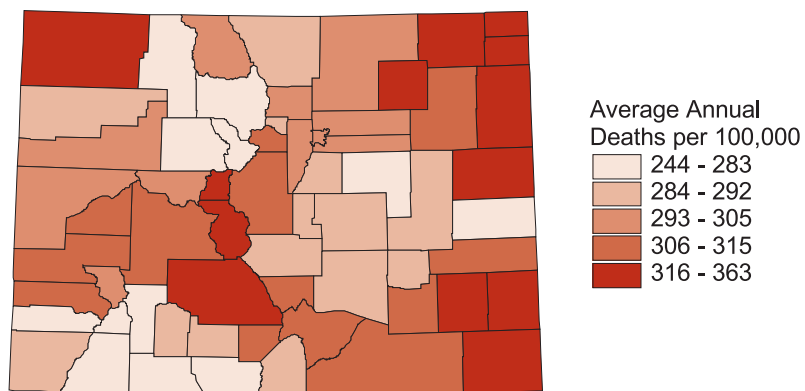
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.



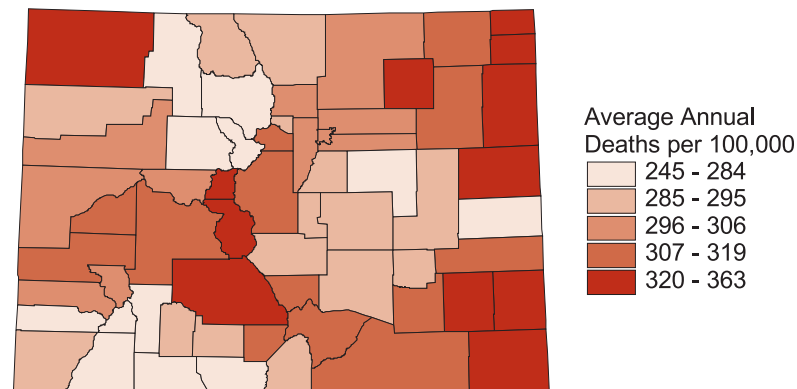
Smoothed County Heart Disease Death Rates, 1991-1995



All Women



White Women

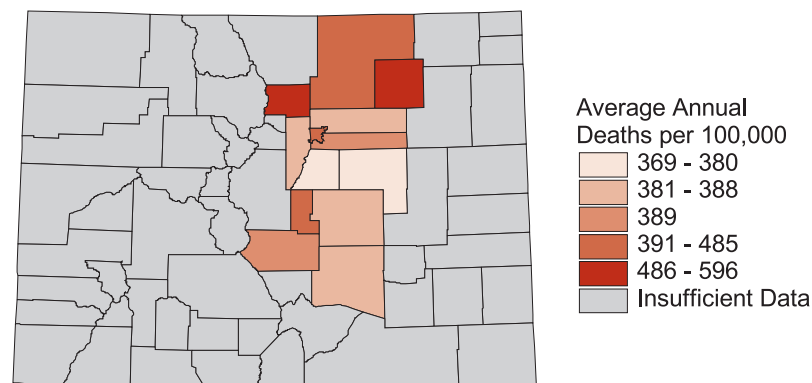


State Profile — Colorado

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	955,382	296
American Indian and Alaska Native Women	6,865	181
Asian and Pacific Islander Women	18,343	160
Black Women	31,765	383
Hispanic Women	95,016	260
White Women	898,409	296

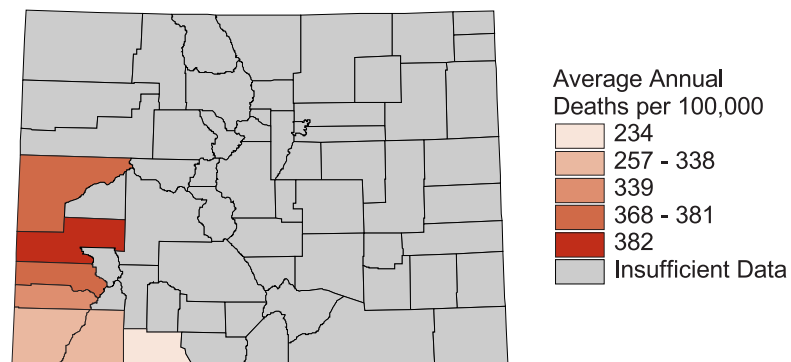
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

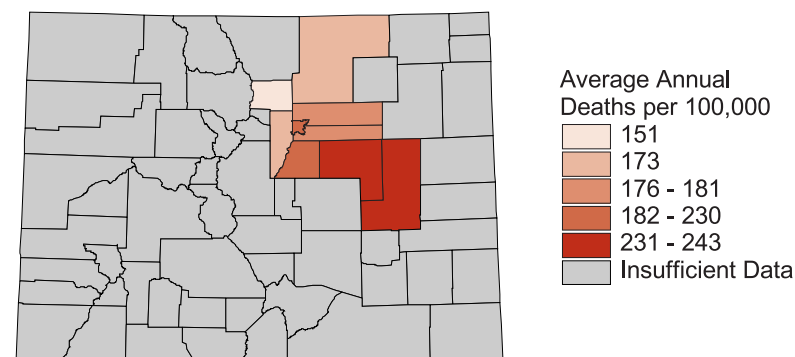


Smoothed County Heart Disease Death Rates, 1991-1995

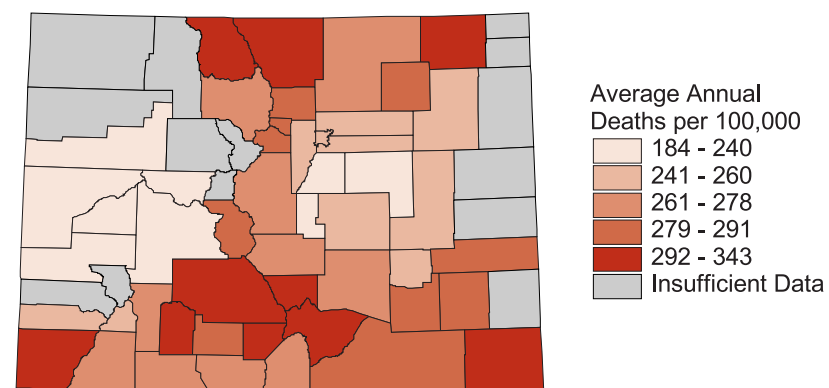
American Indian and Alaska Native Women



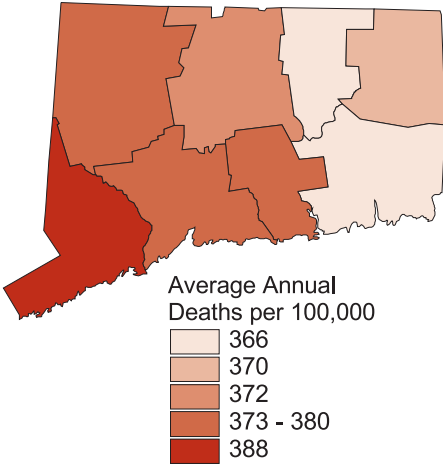
Asian and Pacific Islander Women



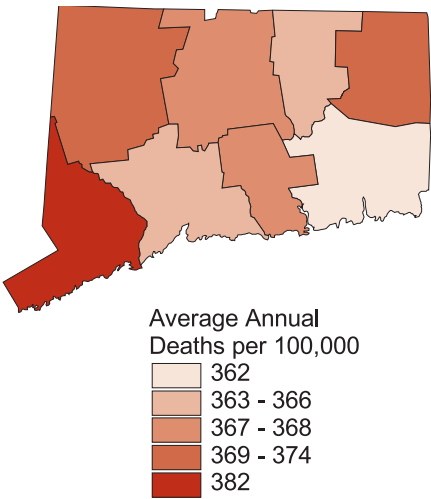
Hispanic Women



All Women



White Women

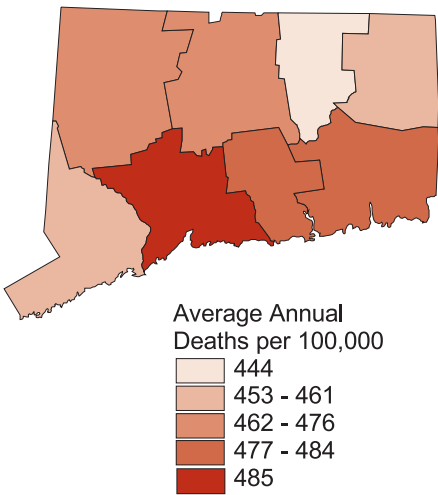


State Profile — Connecticut

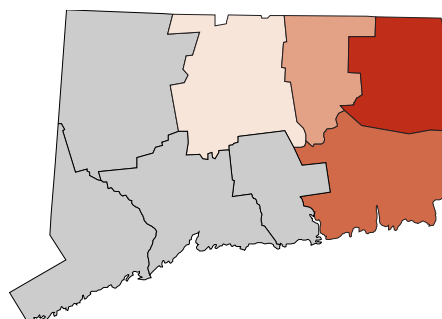
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	905,238	371
American Indian and Alaska Native Women	1,638	313
Asian and Pacific Islander Women	13,759	105
Black Women	63,799	484
Hispanic Women	41,544	197
White Women	826,042	364

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

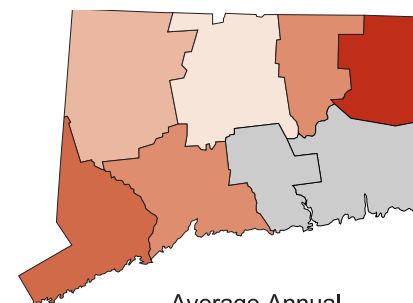


Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native Women

Average Annual
Deaths per 100,000

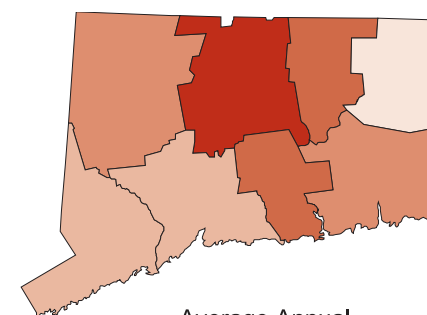
328
357
428
475
Insufficient Data

Asian and Pacific
Islander Women

Average Annual
Deaths per 100,000

96
106
109 - 144
145
148
Insufficient Data

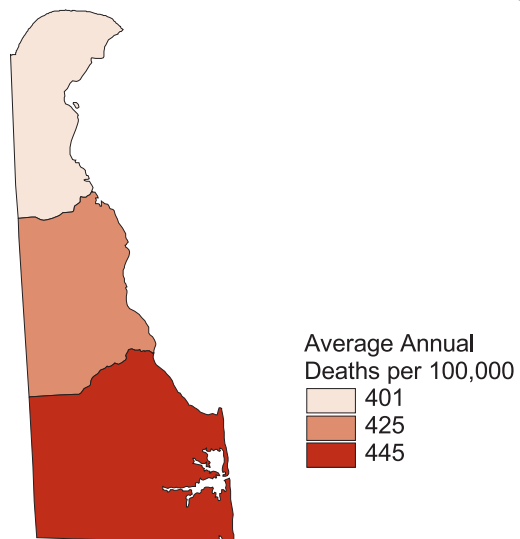
Hispanic Women



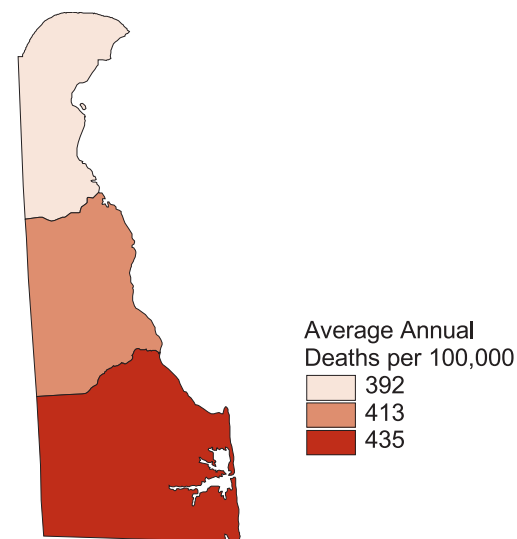
Average Annual
Deaths per 100,000

158
195 - 210
211 - 219
220 - 234
235

All Women



White Women



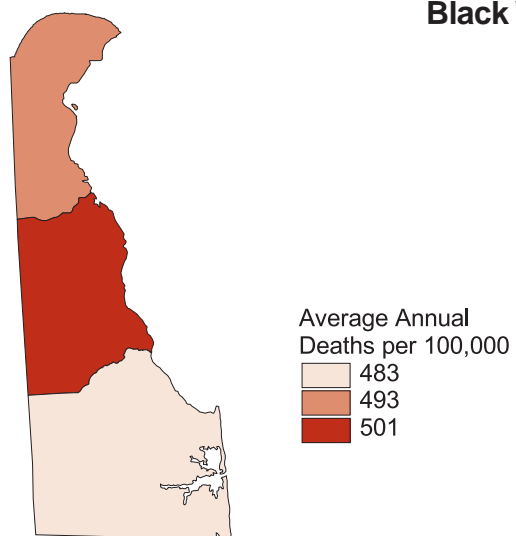
State Profile — Delaware

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	187,157	431
American Indian and Alaska Native Women	527	Insufficient Data
Asian and Pacific Islander Women	2,954	Insufficient Data
Black Women	29,220	509
Hispanic Women	3,164	218
White Women	154,456	419

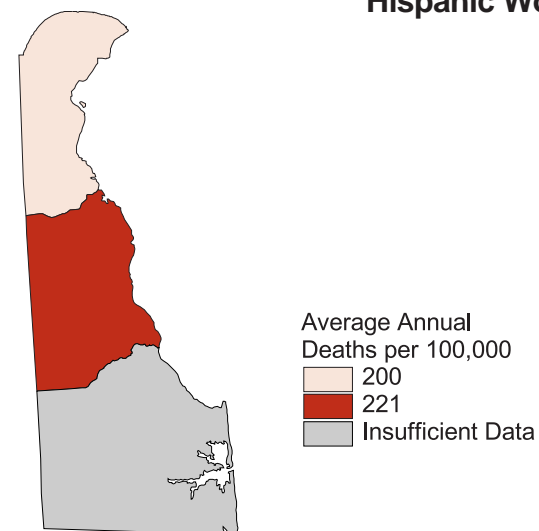
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

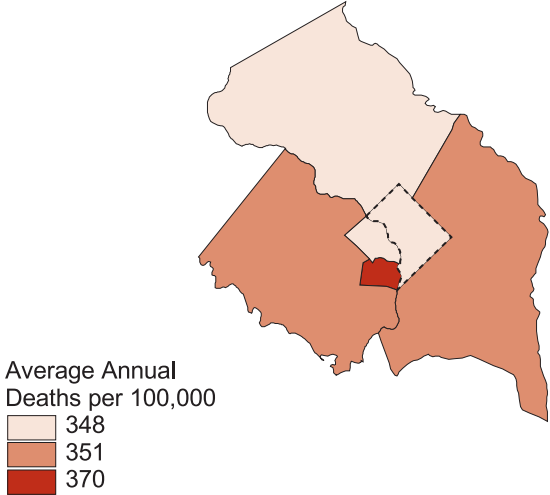
Black Women



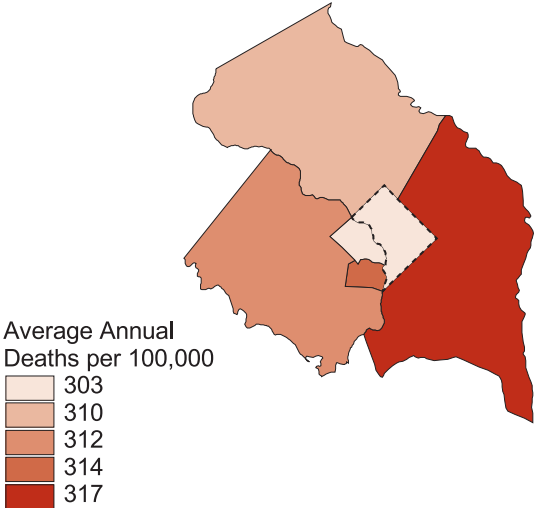
Hispanic Women



All Women



White Women

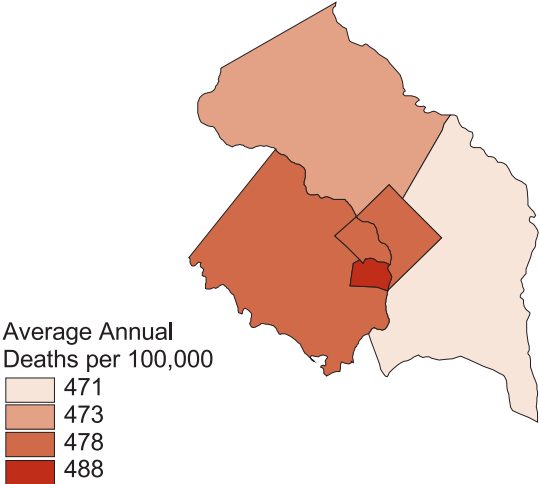


District of Columbia Profile

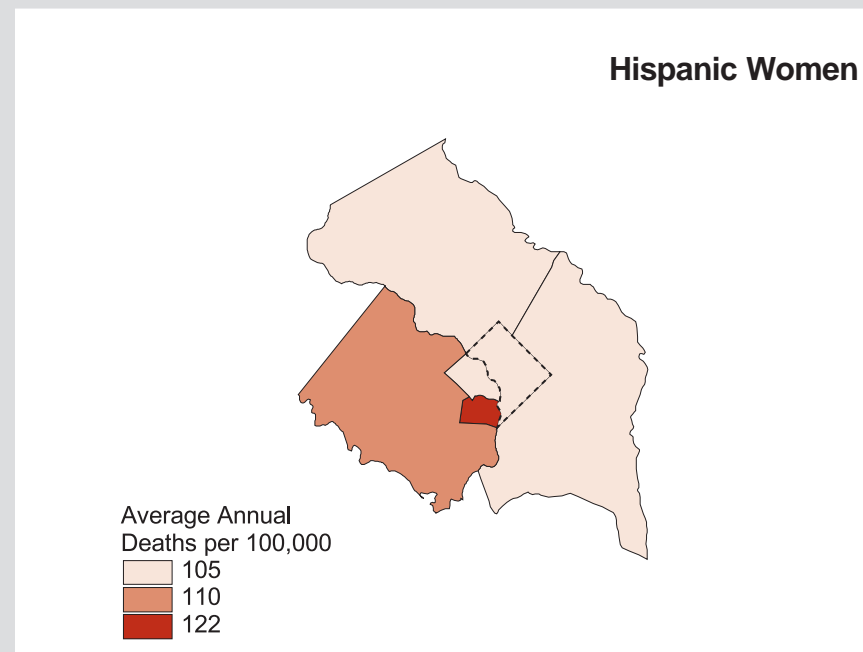
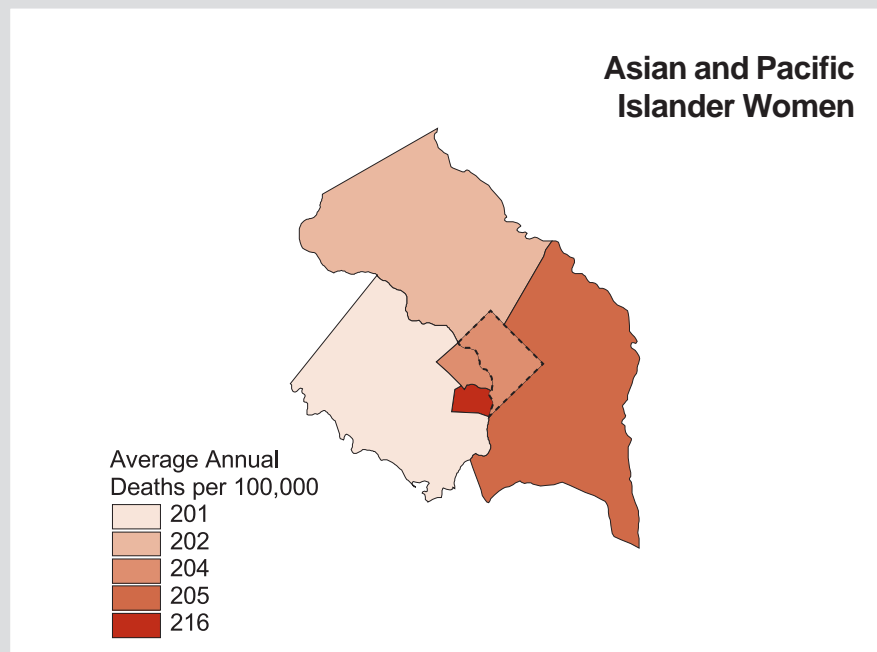
Race or Ethnicity	DC Population 1995	DC Heart Disease Death Rate, 1991-1995*
All Women	153,763	444
American Indian and Alaska Native Women	389	Insufficient Data
Asian and Pacific Islander Women	3,401	209
Black Women	103,777	514
Hispanic Women	7,079	94
White Women	46,196	279

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

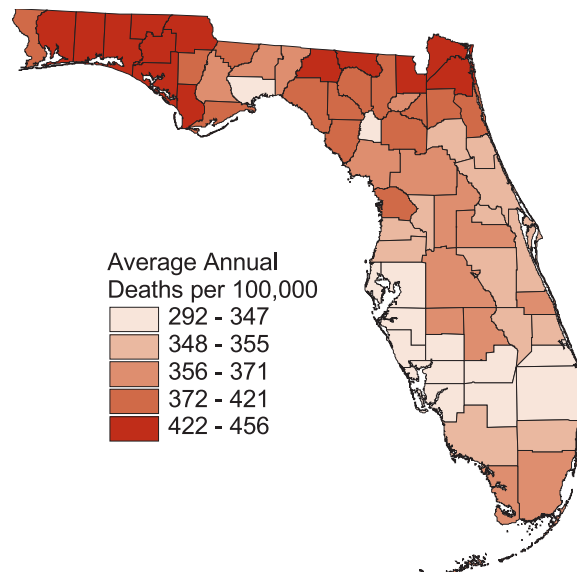


Smoothed County Heart Disease Death Rates, 1991-1995

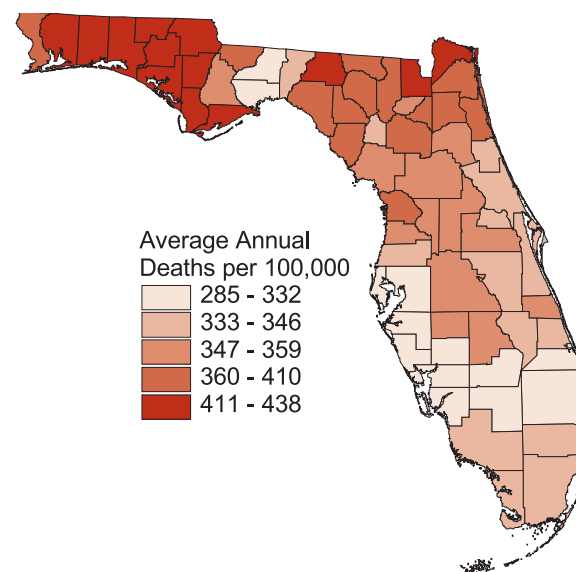


The map of heart disease death rates for the District of Columbia displays spatially smoothed rates for the District of Columbia and all contiguous counties. The District of Columbia has a dashed border on the map. The statistical process for spatial smoothing (described in Appendix B) was performed for all counties in the United States. The heart disease death rates presented in the table for the District of Columbia (opposite) are for the District of Columbia alone, and do not incorporate data from the surrounding counties.

All Women



White Women

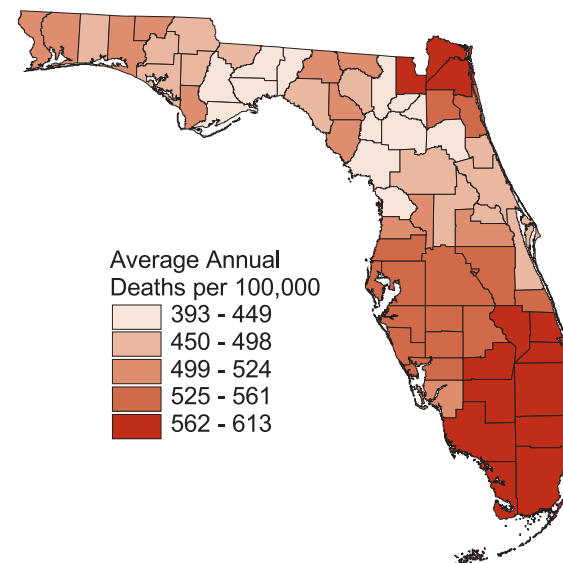


State Profile — Florida

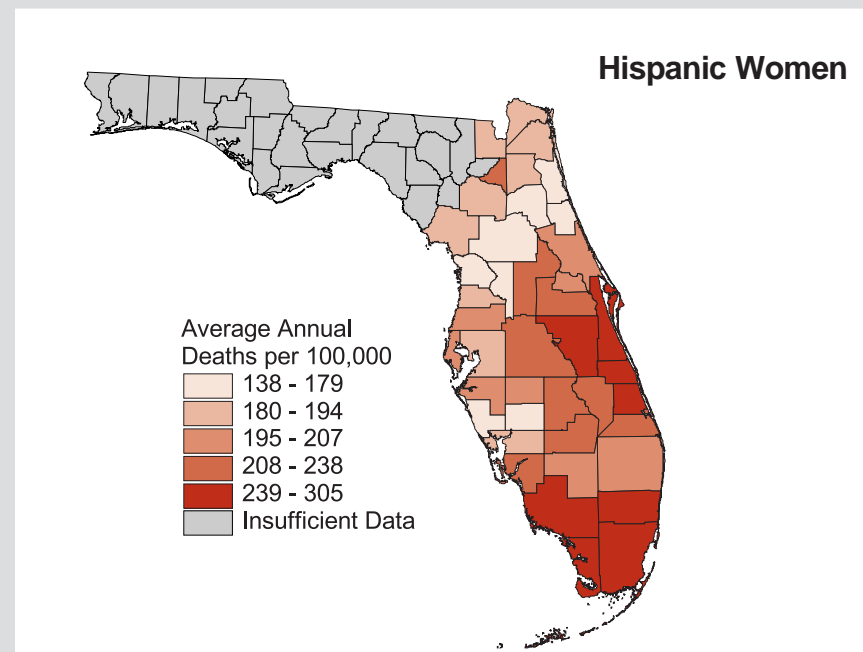
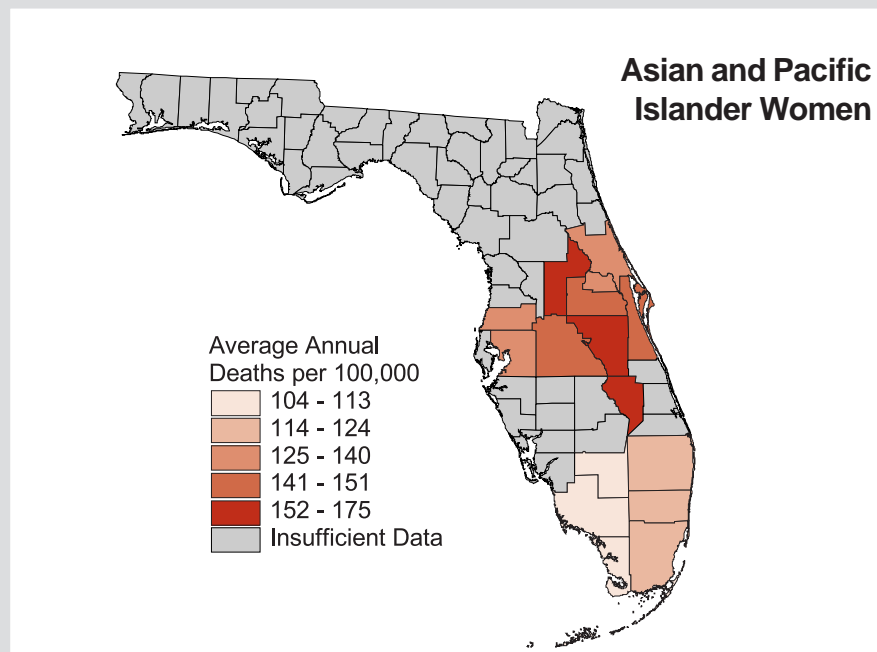
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	4,079,724	353
American Indian and Alaska Native Women	10,878	112
Asian and Pacific Islander Women	54,316	124
Black Women	434,876	532
Hispanic Women	477,796	276
White Women	3,579,654	339

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

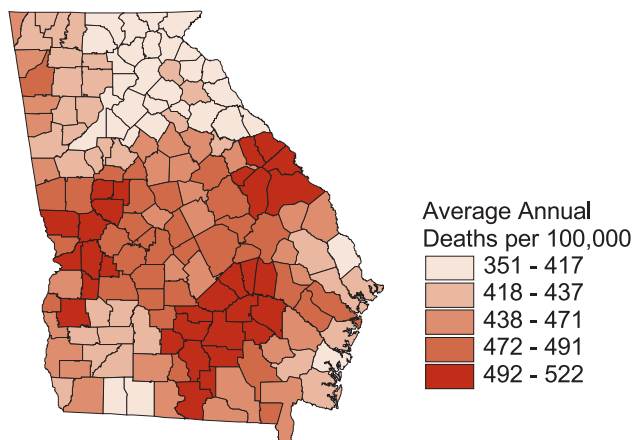
Black Women



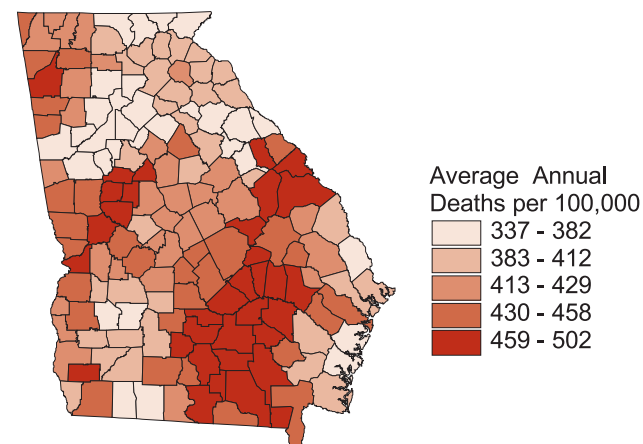
Smoothed County Heart Disease Death Rates, 1991-1995



All Women



White Women

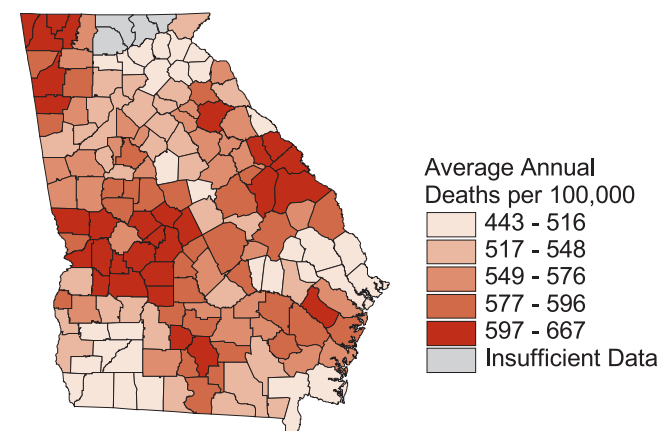


State Profile — Georgia

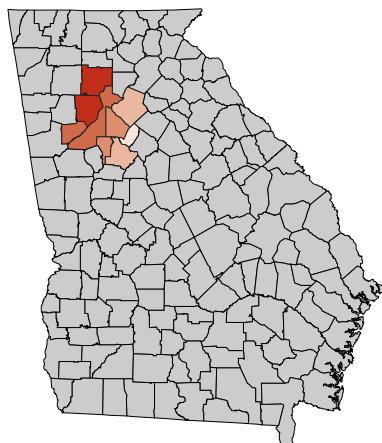
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,785,363	440
American Indian and Alaska Native Women	3,568	Insufficient Data
Asian and Pacific Islander Women	24,878	197
Black Women	436,167	564
Hispanic Women	24,059	132
White Women	1,320,750	408

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women



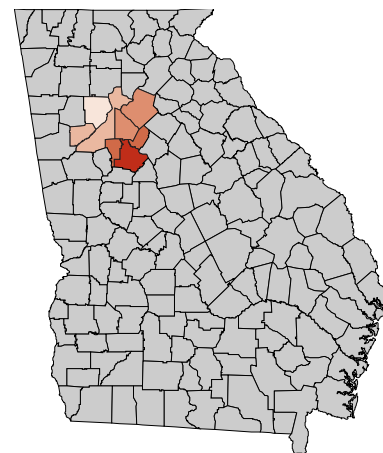
Smoothed County Heart Disease Death Rates, 1991-1995

Asian and Pacific
Islander Women

Average Annual
Deaths per 100,000

192
193 - 196
197 - 220
221 - 265
266 - 280
Insufficient Data

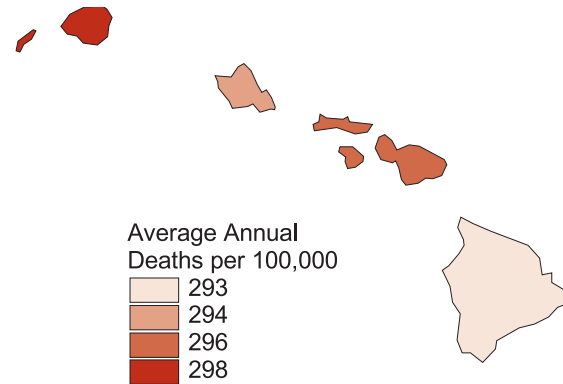
Hispanic Women



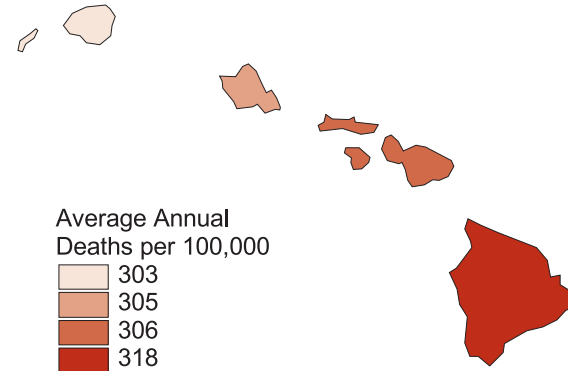
Average Annual
Deaths per 100,000

101
108 - 140
141 - 160
161 - 206
207
Insufficient Data

All Women



White Women

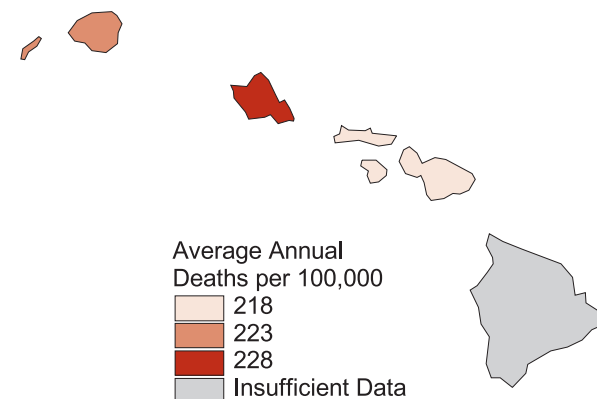


State Profile — Hawaii

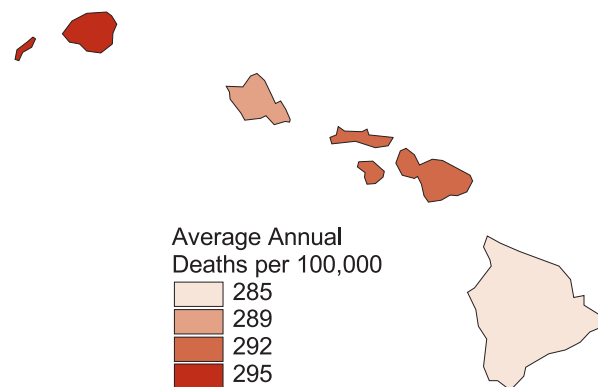
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	297,222	297
American Indian and Alaska Native Women	1,161	Insufficient Data
Asian and Pacific Islander Women	199,714	293
Black Women	3,877	212
Hispanic Women	15,700	293
White Women	92,470	307

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

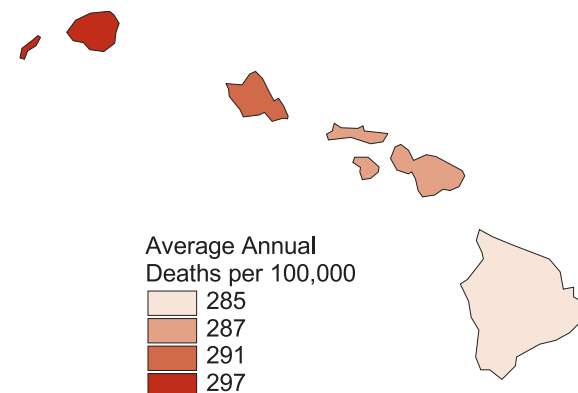
Black Women



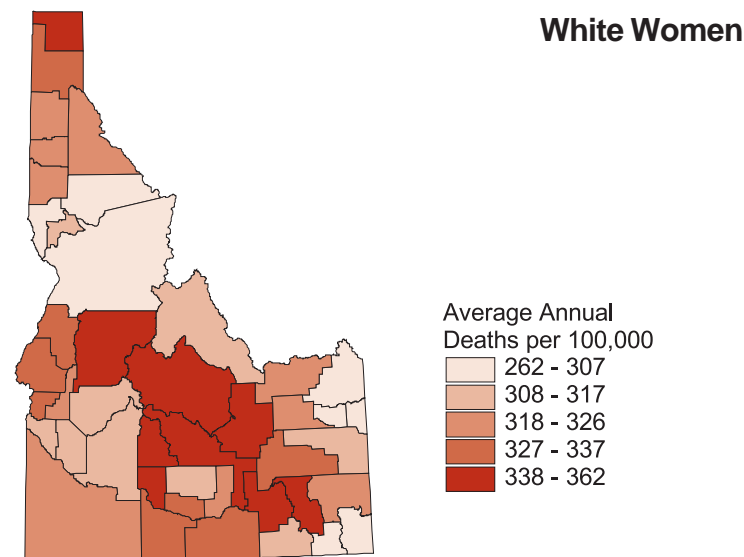
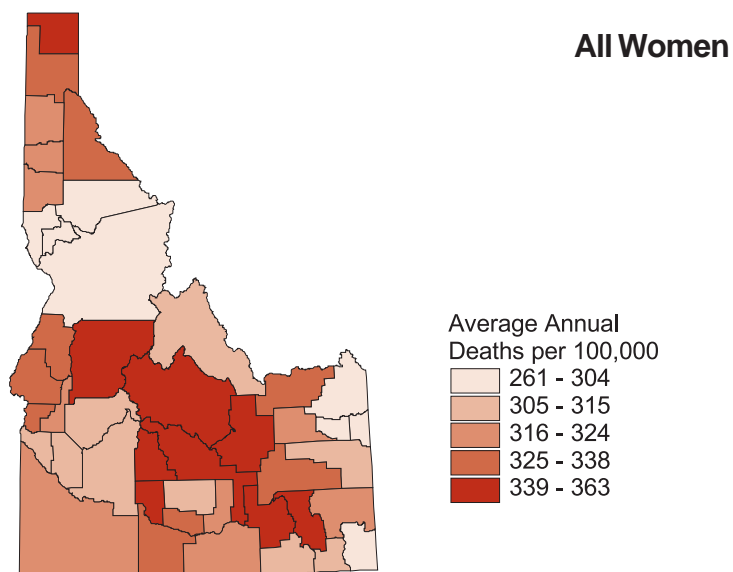
Smoothed County Heart Disease Death Rates, 1991-1995

Asian and Pacific
Islander Women

Hispanic Women



Smoothed County Heart Disease Death Rates, 1991-1995



State Profile — Idaho

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	279,469	323
American Indian and Alaska Native Women	2,857	202
Asian and Pacific Islander Women	2,476	248
Black Women	765	Insufficient Data
Hispanic Women	9,365	195
White Women	273,371	324

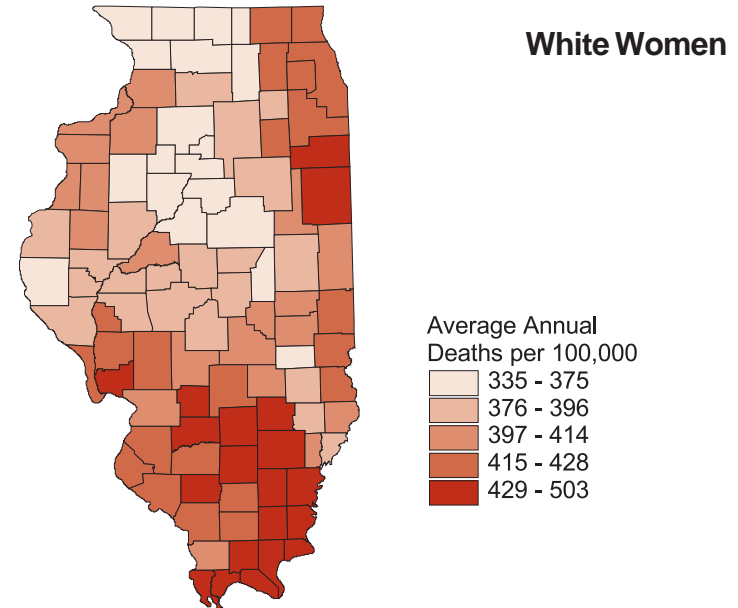
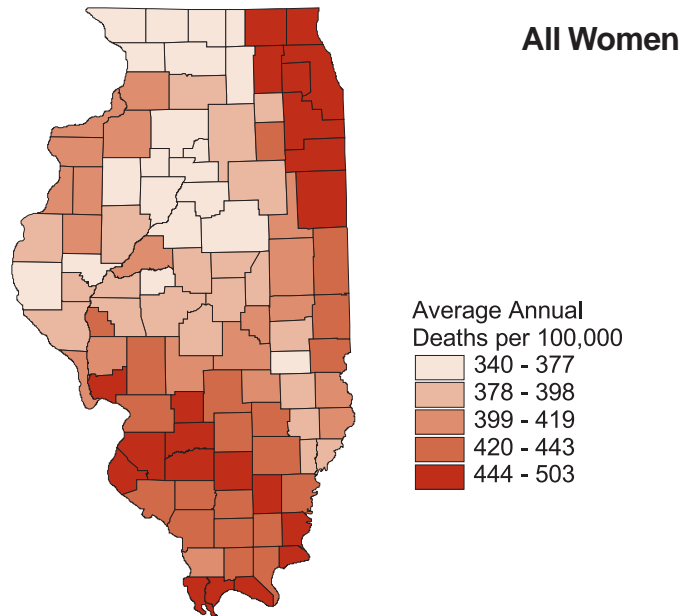
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Pueblo resident in Taos, New Mexico.



Norma Holt, Impact Visuals

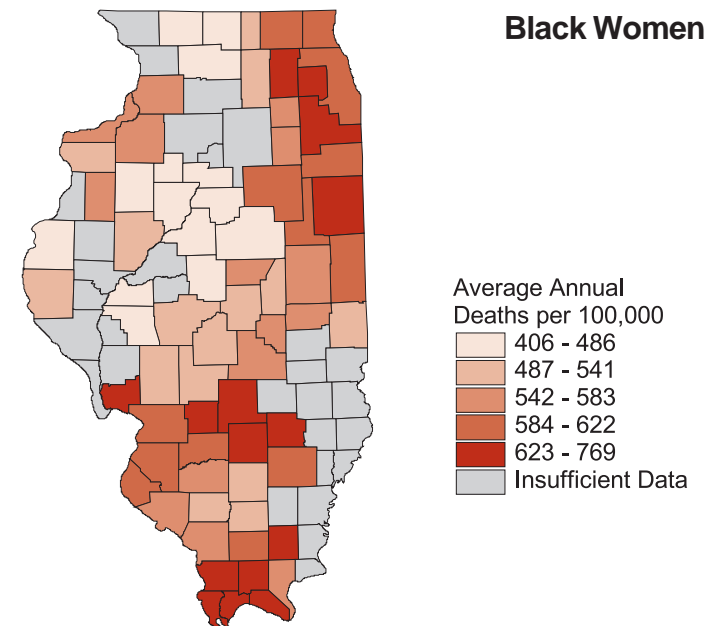
Smoothed County Heart Disease Death Rates, 1991-1995



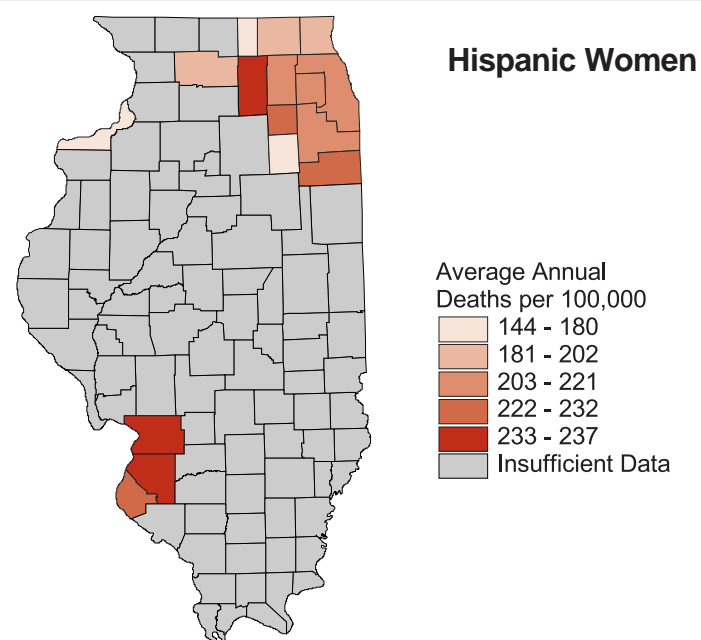
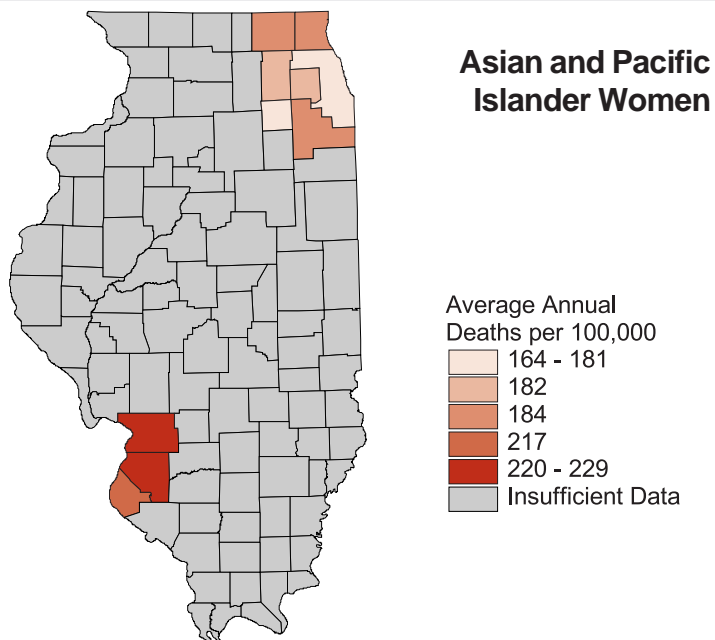
State Profile — Illinois

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	3,053,481	429
American Indian and Alaska Native Women	5,544	114
Asian and Pacific Islander Women	81,436	179
Black Women	406,616	610
Hispanic Women	163,766	195
White Women	2,559,885	407

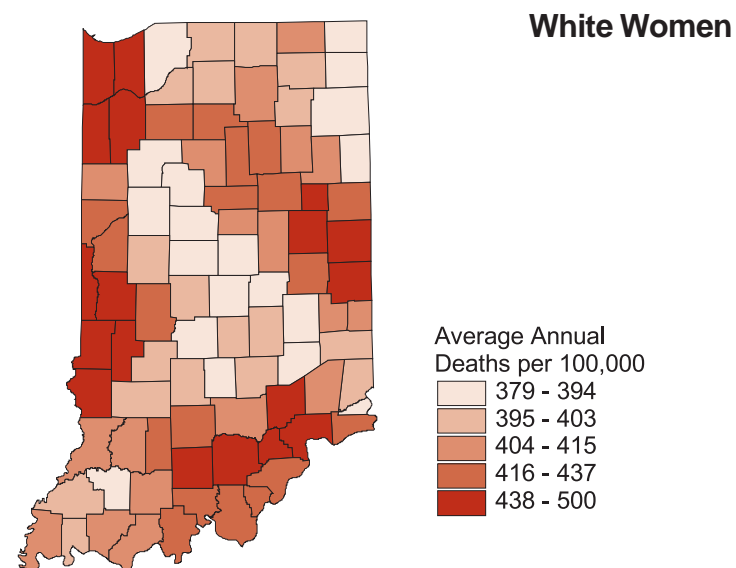
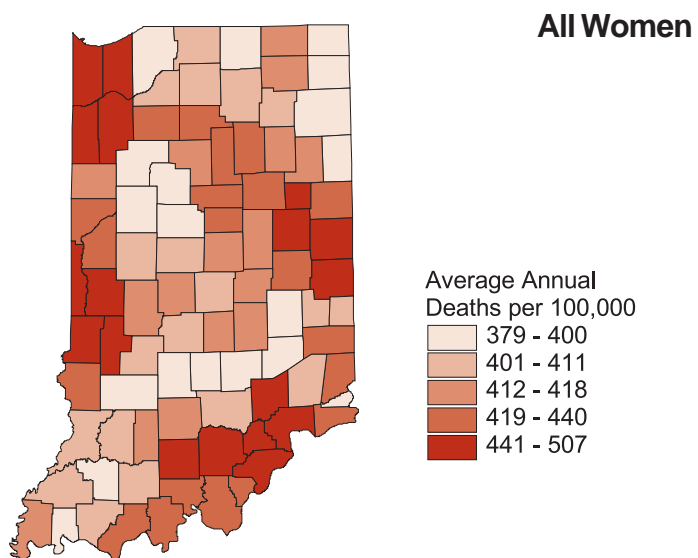
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.



Smoothed County Heart Disease Death Rates, 1991-1995



Smoothed County Heart Disease Death Rates, 1991-1995

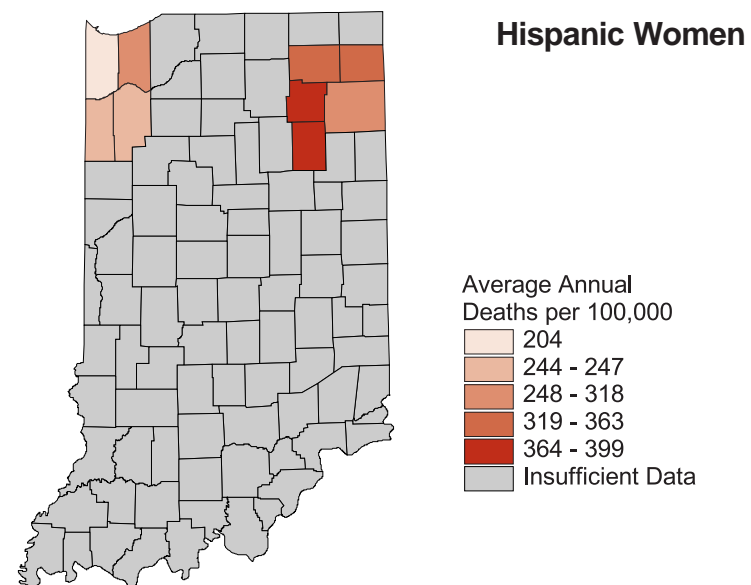
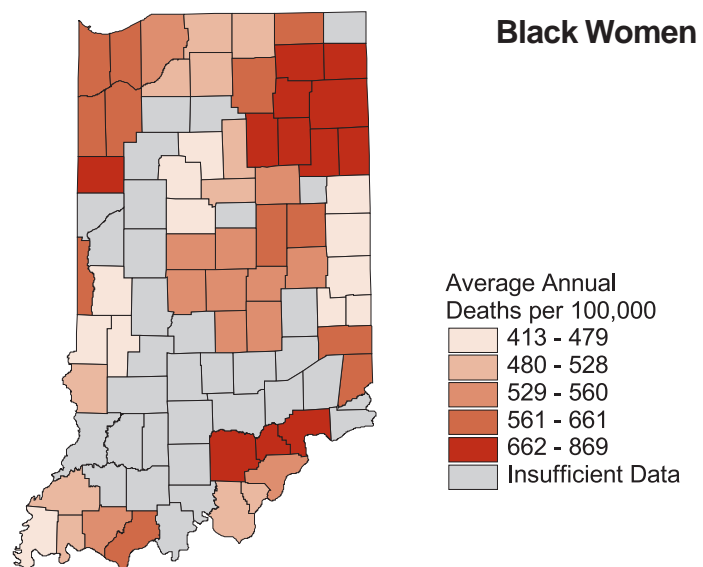


State Profile — Indiana

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,519,445	422
American Indian and Alaska Native Women	3,156	Insufficient Data
Asian and Pacific Islander Women	10,059	183
Black Women	106,443	571
Hispanic Women	20,837	209
White Women	1,399,787	413

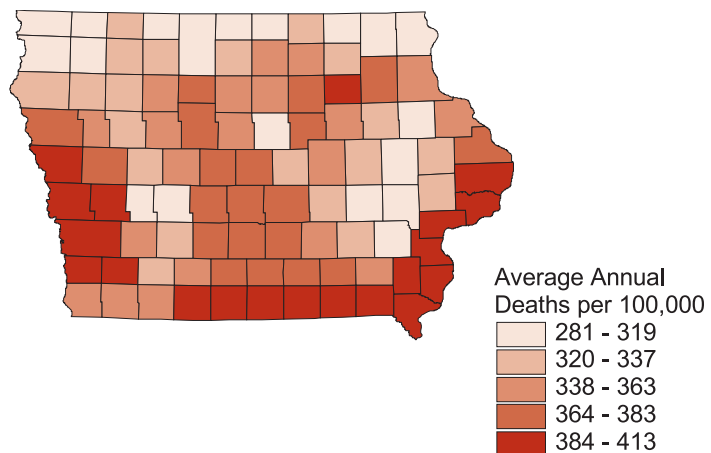
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

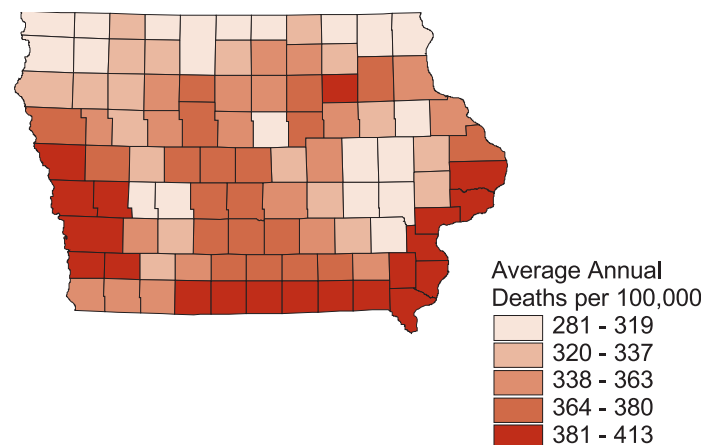


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women



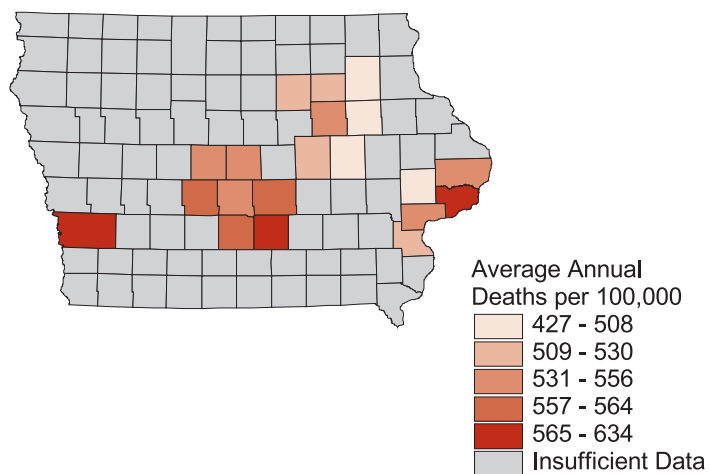
State Profile — Iowa

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	776,201	357
American Indian and Alaska Native Women	1,439	Insufficient Data
Asian and Pacific Islander Women	5,252	272
Black Women	9,662	500
Hispanic Women	6,582	229
White Women	759,848	356

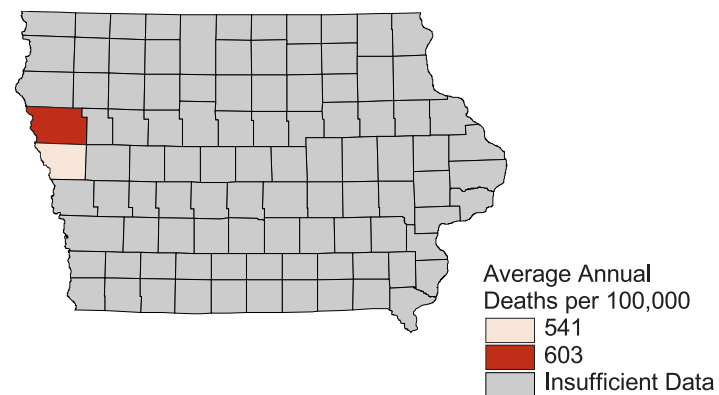
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

Black Women

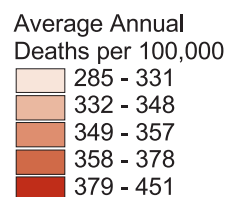
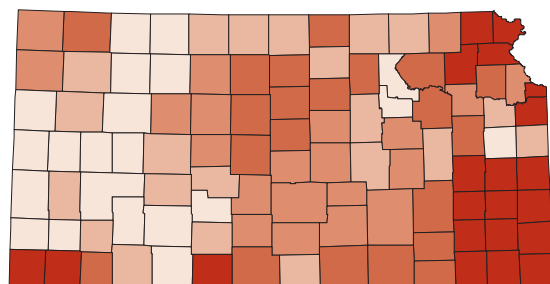


American Indian and Alaska Native Women

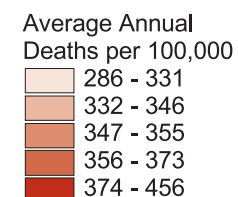
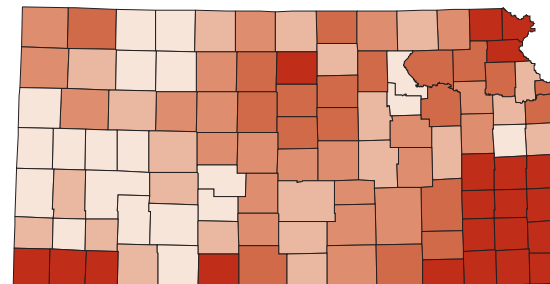


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

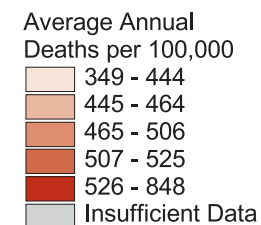
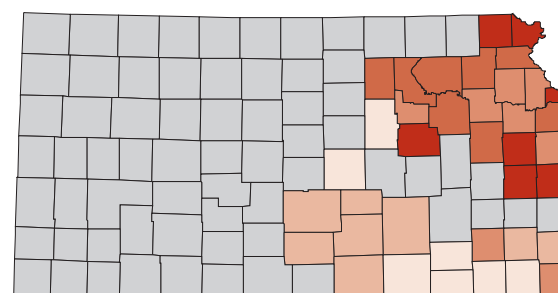


State Profile — Kansas

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	664,026	361
American Indian and Alaska Native Women	4,649	352
Asian and Pacific Islander Women	7,719	142
Black Women	30,301	477
Hispanic Women	17,191	192
White Women	621,357	357

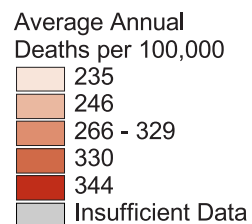
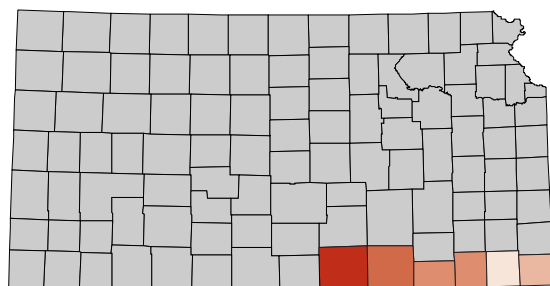
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

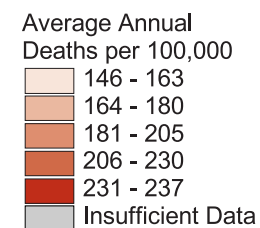
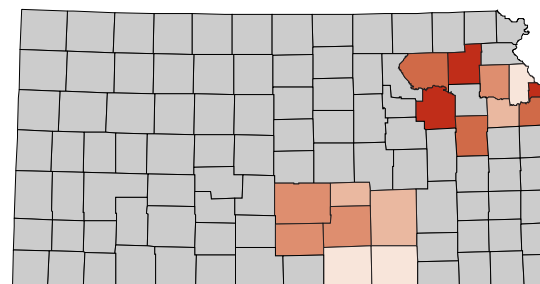


Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and Alaska Native Women

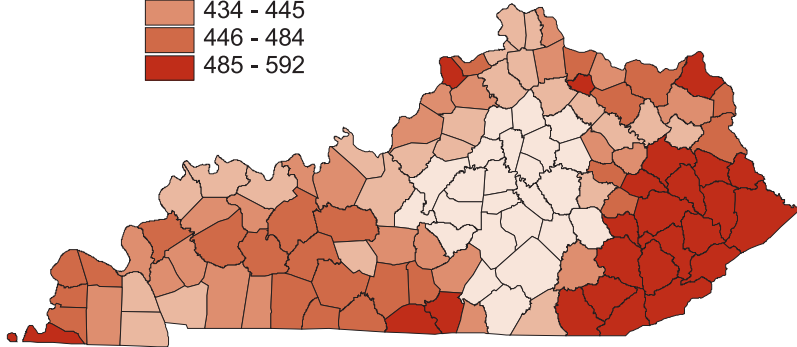
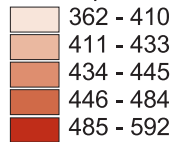


Hispanic Women



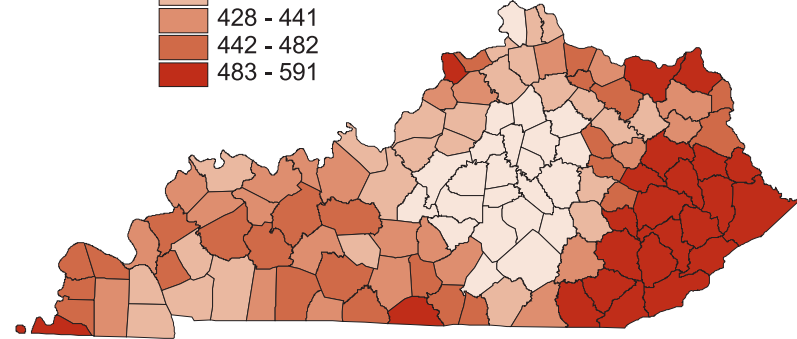
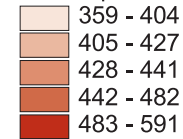
All Women

Average Annual
Deaths per 100,000



White Women

Average Annual
Deaths per 100,000



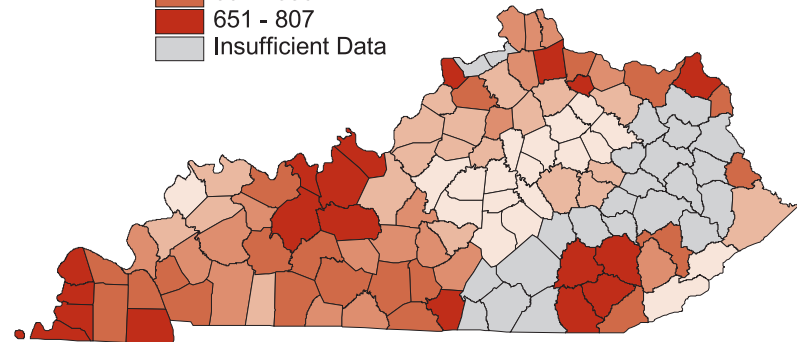
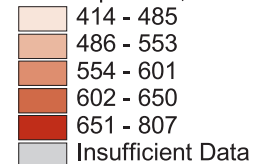
State Profile — Kentucky

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,023,219	441
American Indian and Alaska Native Women	1,344	Insufficient Data
Asian and Pacific Islander Women	4,832	325
Black Women	64,758	533
Hispanic Women	4,546	315
White Women	952,285	436

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

Black Women

Average Annual
Deaths per 100,000

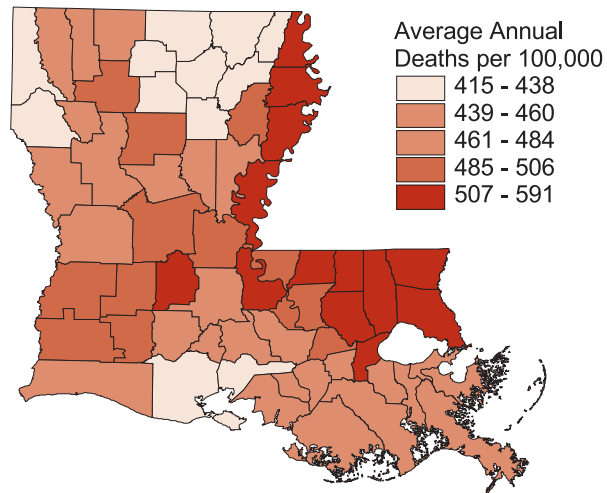


Vegetable shopping in San Francisco, California.

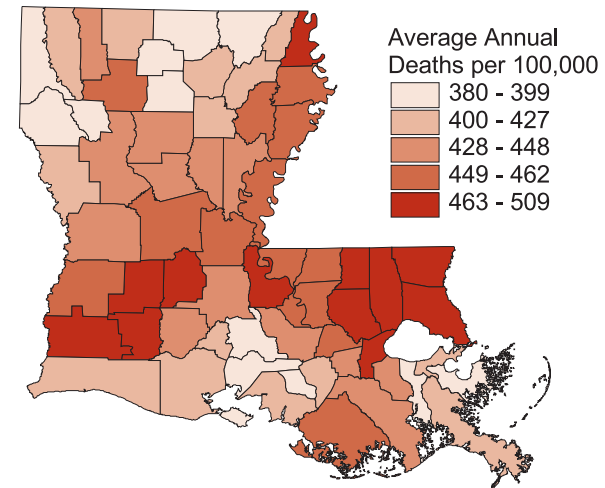


Jack Kurtz, Impact Visuals

All Women



White Women

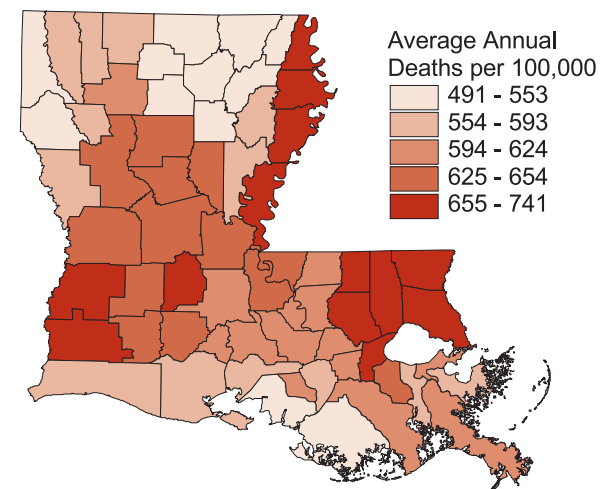


State Profile — Louisiana

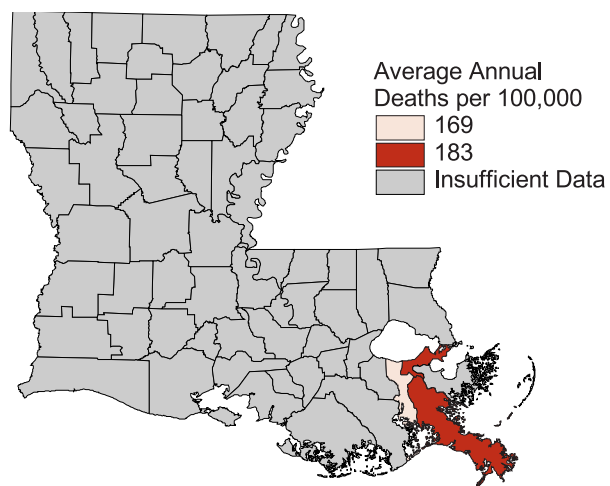
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,086,374	469
American Indian and Alaska Native Women	3,780	188
Asian and Pacific Islander Women	10,181	175
Black Women	301,133	595
Hispanic Women	24,002	159
White Women	771,280	428

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

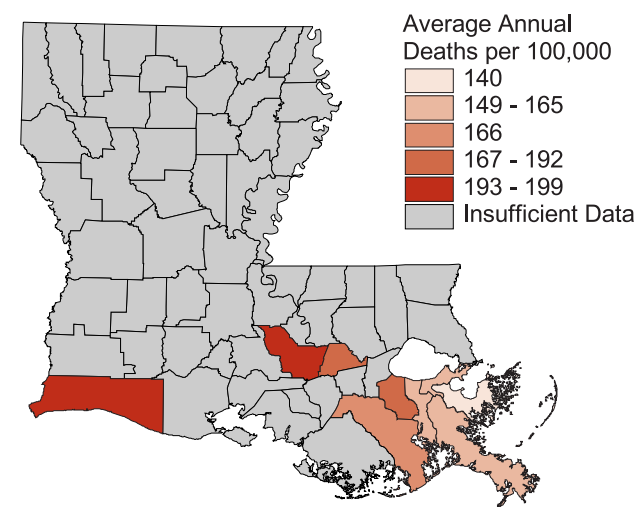
Black Women



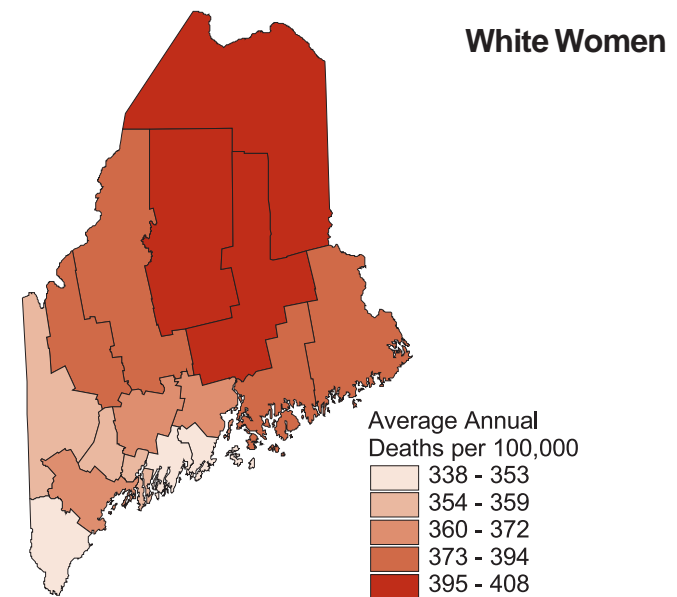
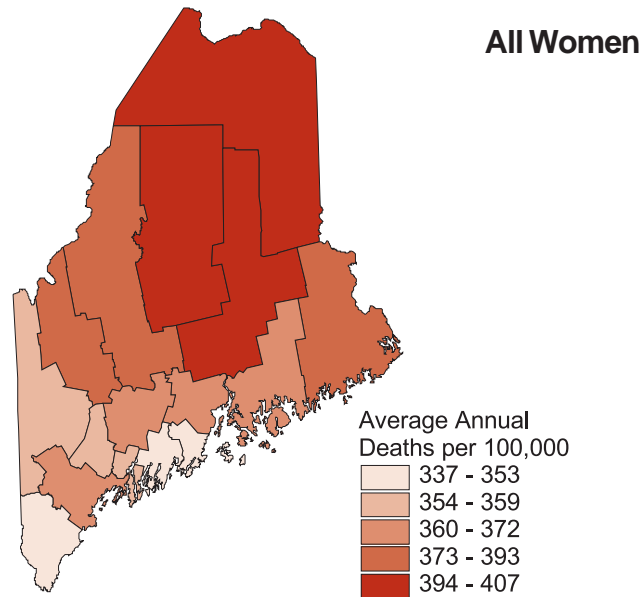
Smoothed County Heart Disease Death Rates, 1991-1995

Asian and Pacific
Islander Women

Hispanic Women



Smoothed County Heart Disease Death Rates, 1991-1995



State Profile — Maine

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	340,181	366
American Indian and Alaska Native Women	1,091	Insufficient Data
Asian and Pacific Islander Women	1,697	Insufficient Data
Black Women	645	Insufficient Data
Hispanic Women	1,394	Insufficient Data
White Women	336,748	367

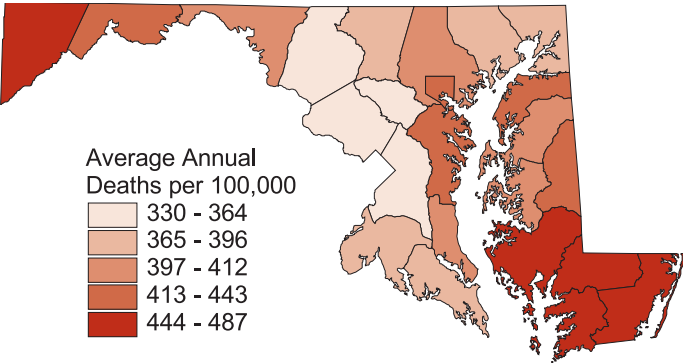
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Slicing vegetables.

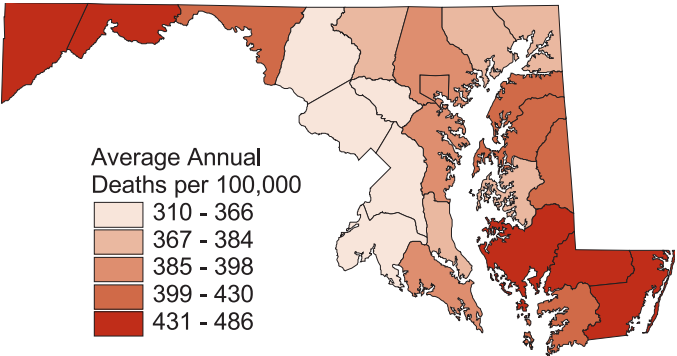


©TSM/John Henley

All Women



White Women

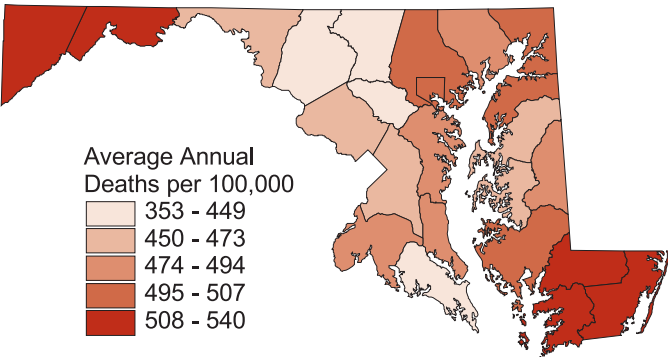


State Profile — Maryland

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,316,398	395
American Indian and Alaska Native Women	3,258	Insufficient Data
Asian and Pacific Islander Women	42,134	201
Black Women	315,633	480
Hispanic Women	30,620	89
White Women	955,373	376

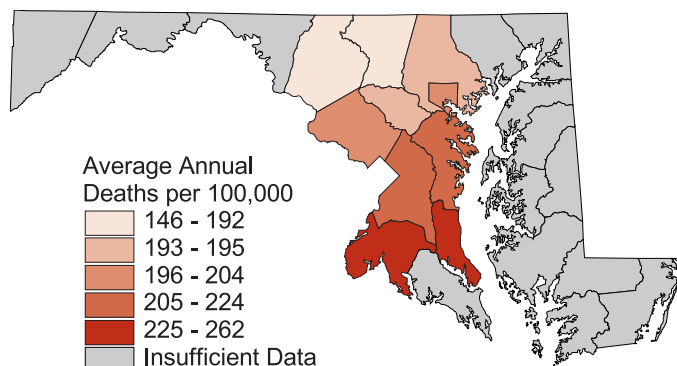
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

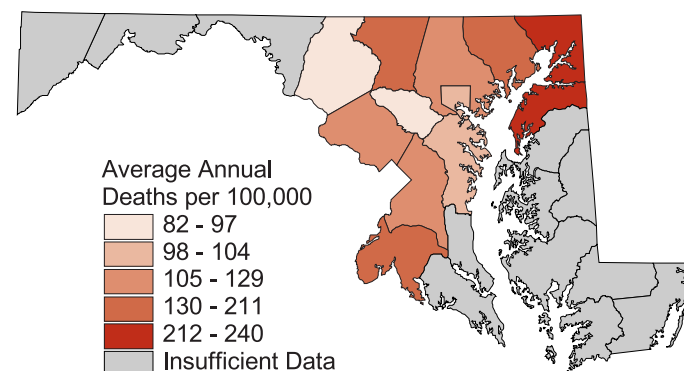


Smoothed County Heart Disease Death Rates, 1991-1995

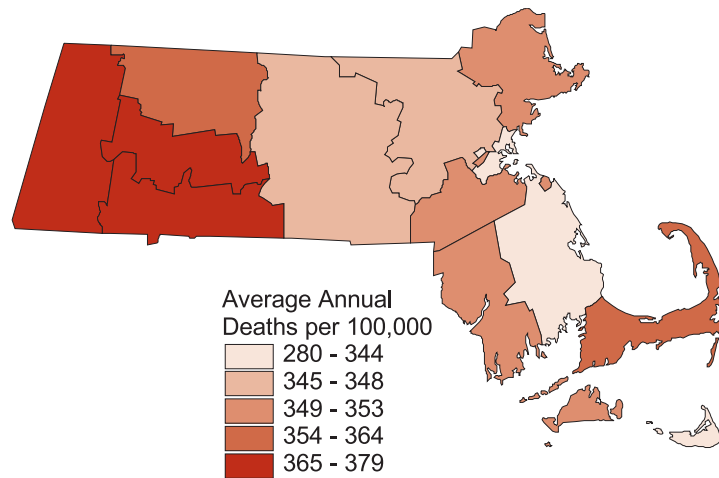
Asian and Pacific Islander Women



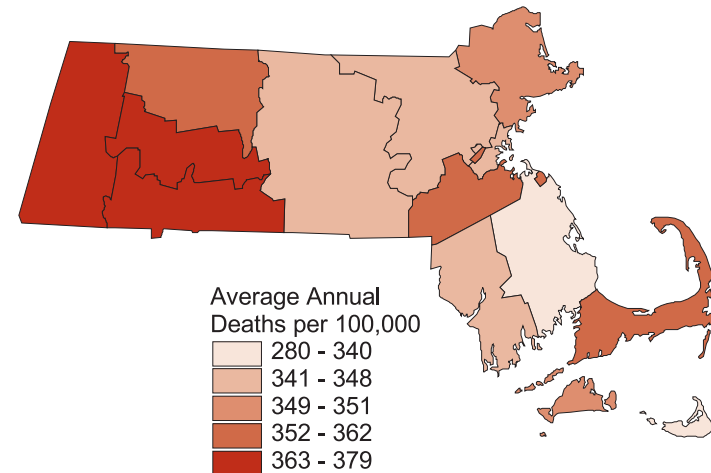
Hispanic Women



All Women



White Women

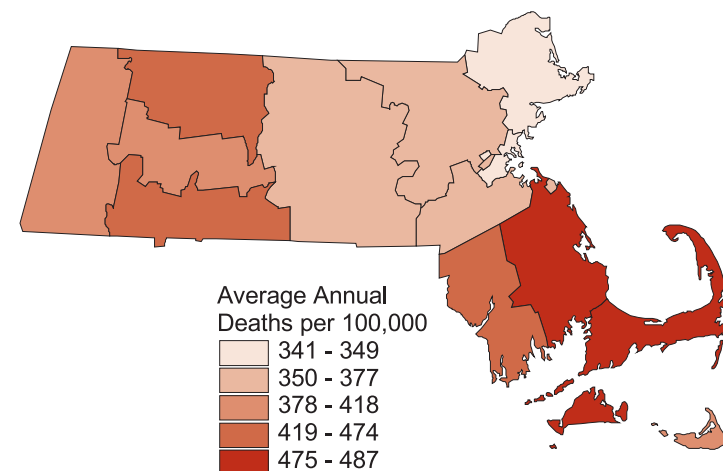


State Profile — Massachusetts

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,650,271	349
American Indian and Alaska Native Women	2,955	Insufficient Data
Asian and Pacific Islander Women	34,362	158
Black Women	71,810	367
Hispanic Women	52,023	149
White Women	1,541,144	349

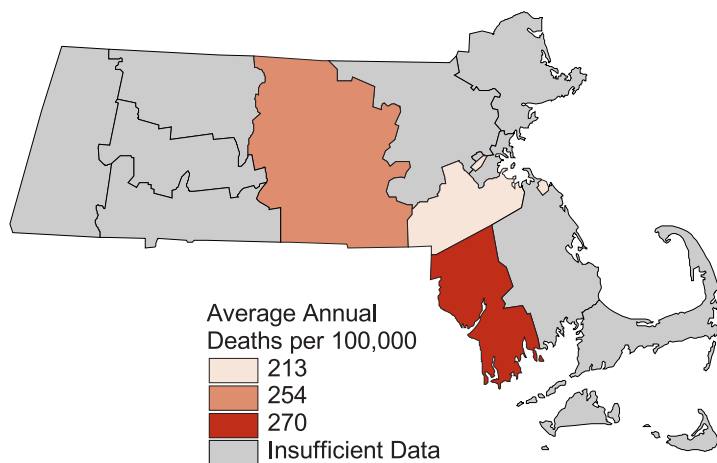
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

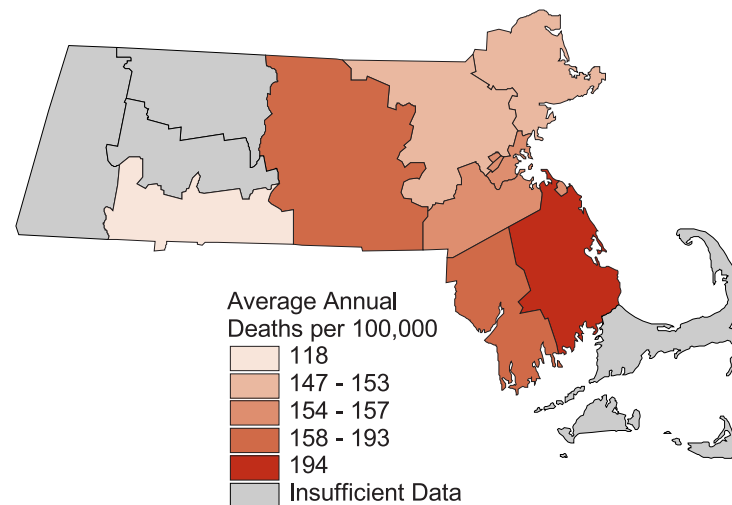


Smoothed County Heart Disease Death Rates, 1991-1995

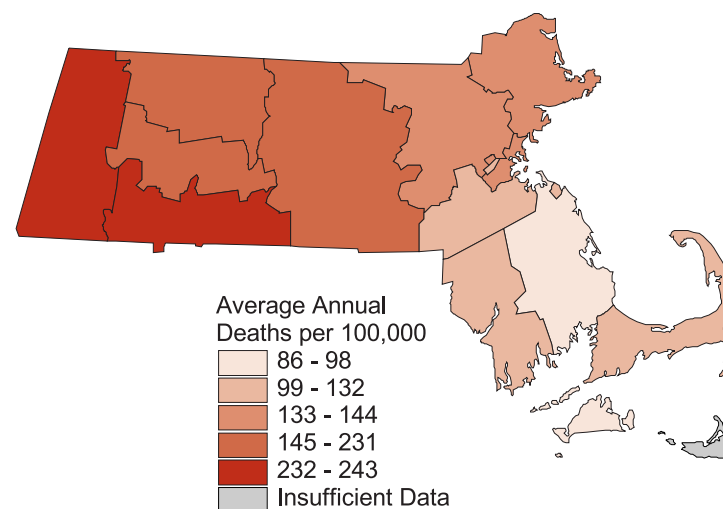
American Indian and Alaska Native Women



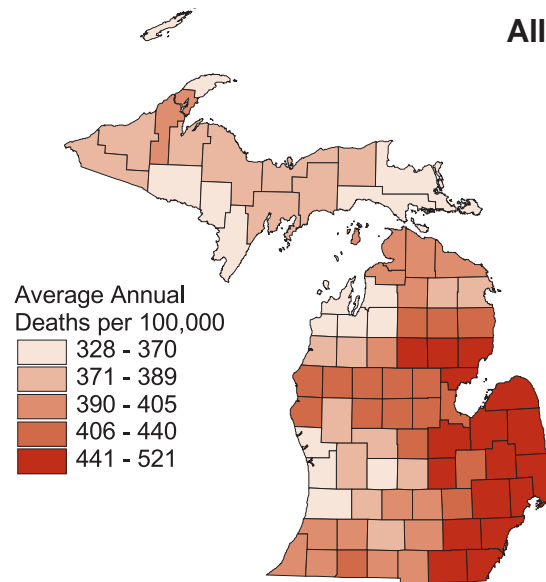
Asian and Pacific Islander Women



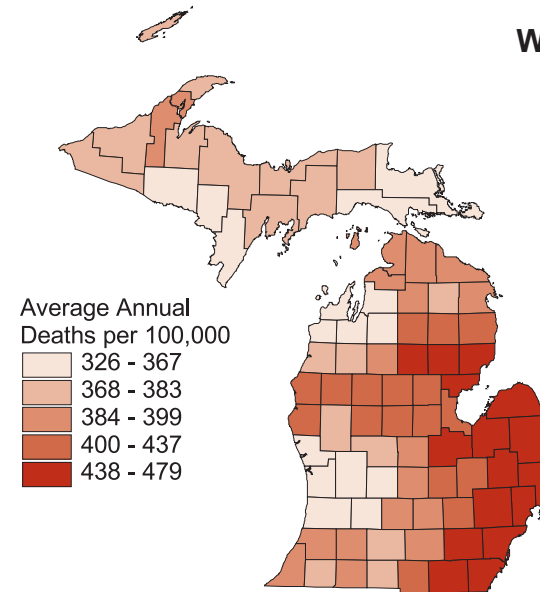
Hispanic Women



All Women



White Women

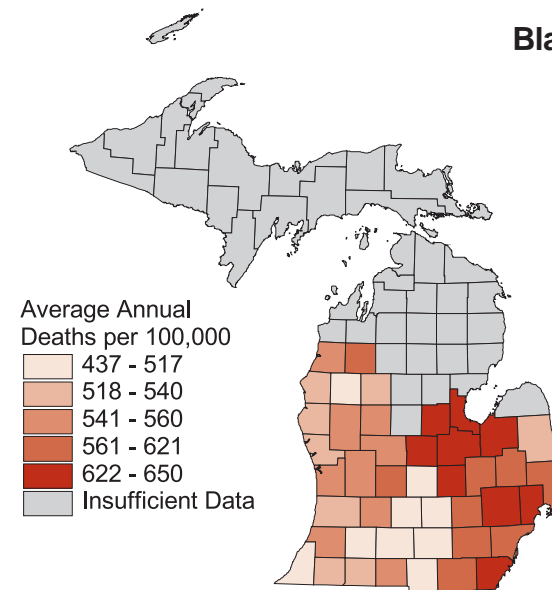


State Profile — Michigan

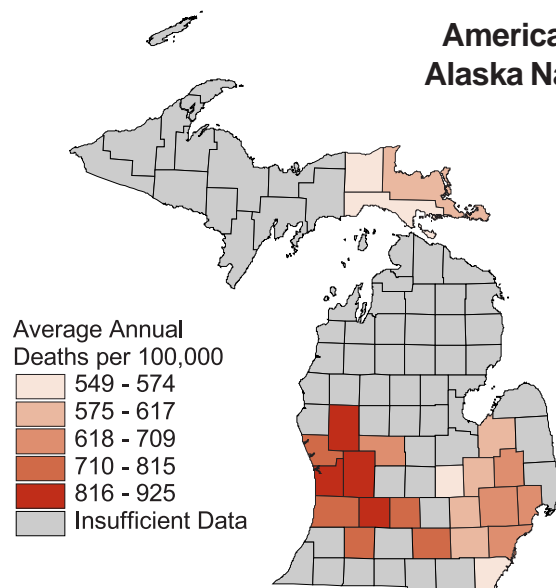
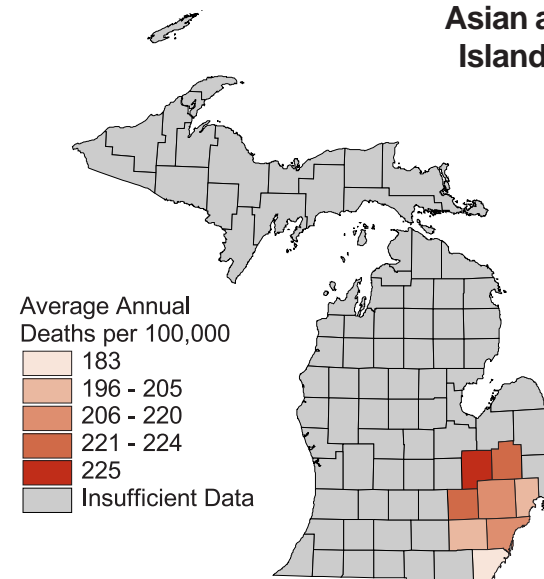
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	2,469,069	442
American Indian and Alaska Native Women	11,749	617
Asian and Pacific Islander Women	26,332	201
Black Women	312,205	610
Hispanic Women	38,610	229
White Women	2,118,783	419

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

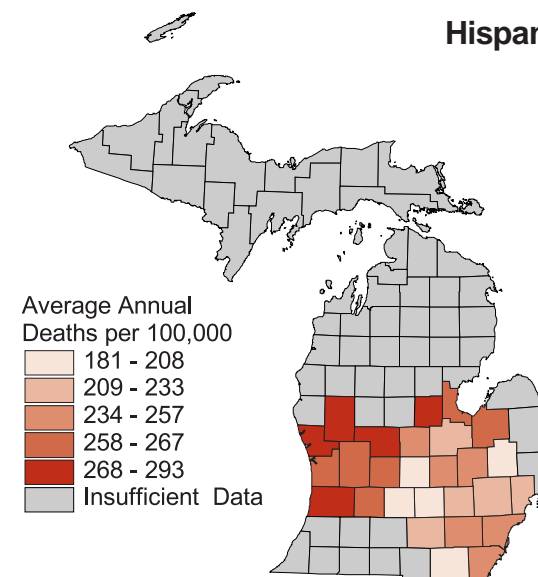
Black Women



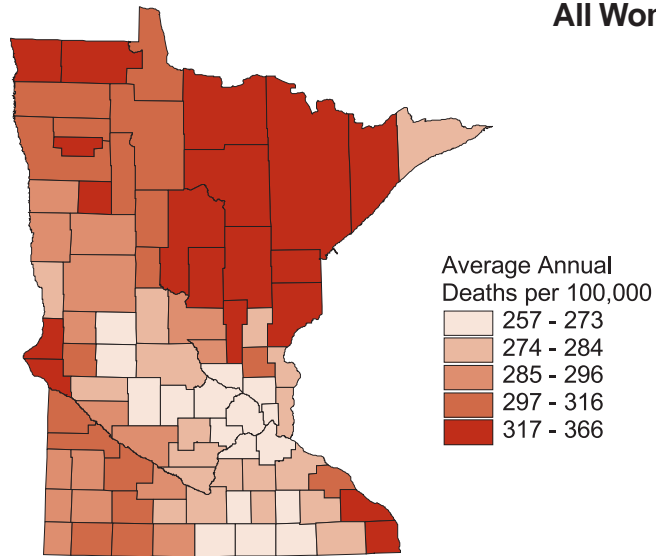
Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

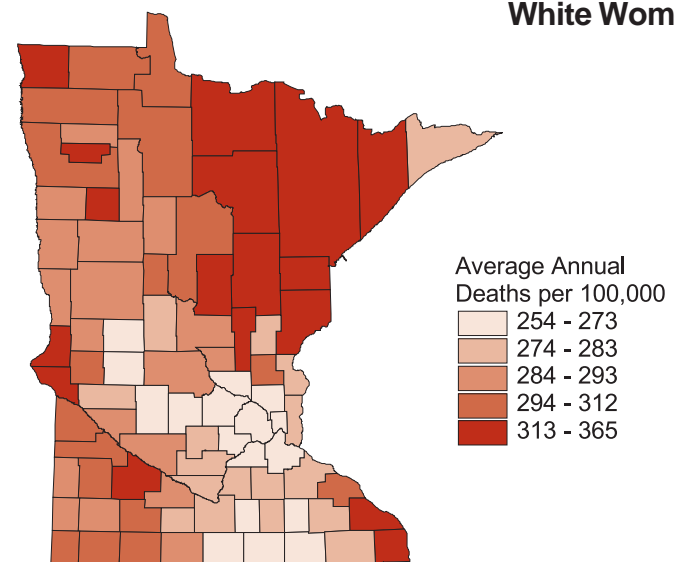
Hispanic Women



All Women



White Women

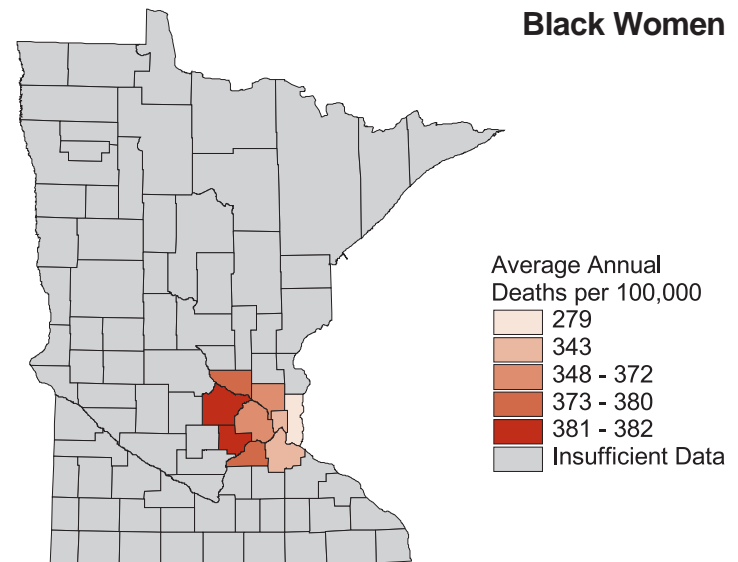


State Profile — Minnesota

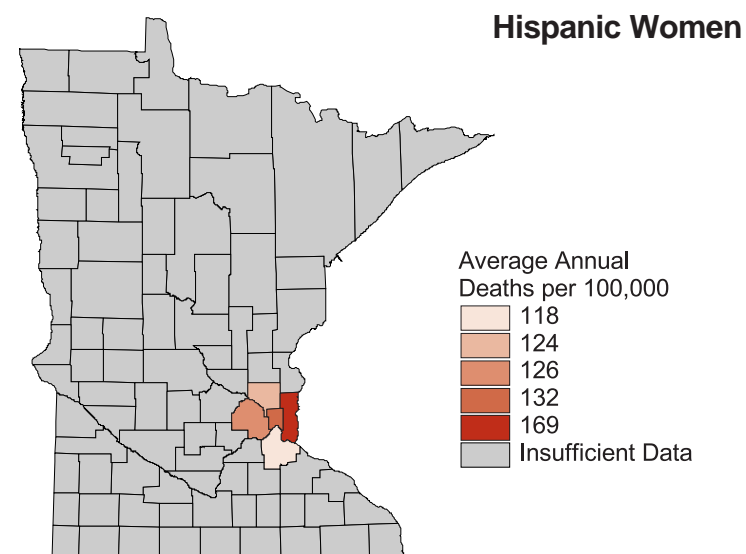
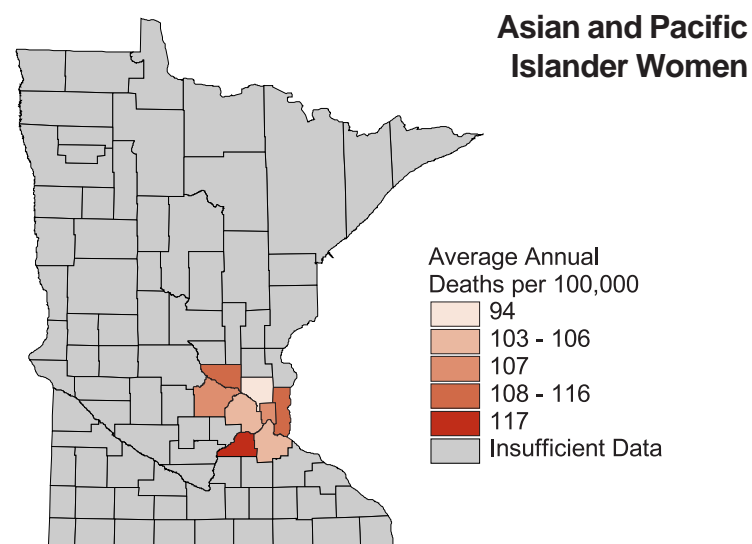
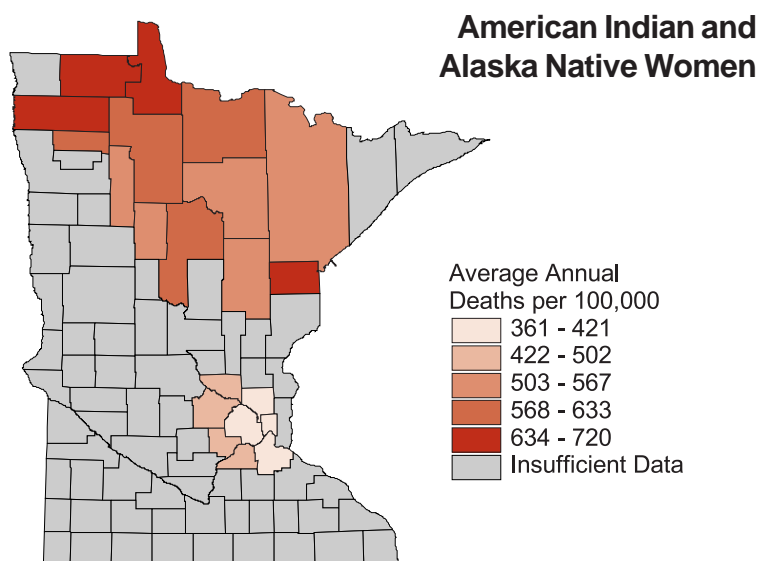
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,174,749	284
American Indian and Alaska Native Women	8,901	472
Asian and Pacific Islander Women	15,363	99
Black Women	18,256	339
Hispanic Women	10,009	138
White Women	1,132,229	282

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

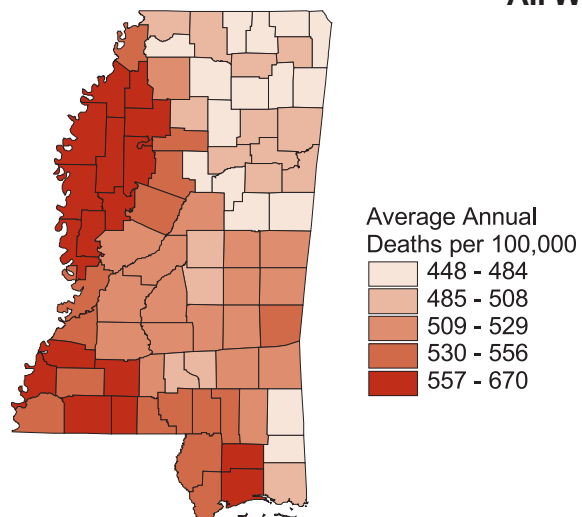
Black Women



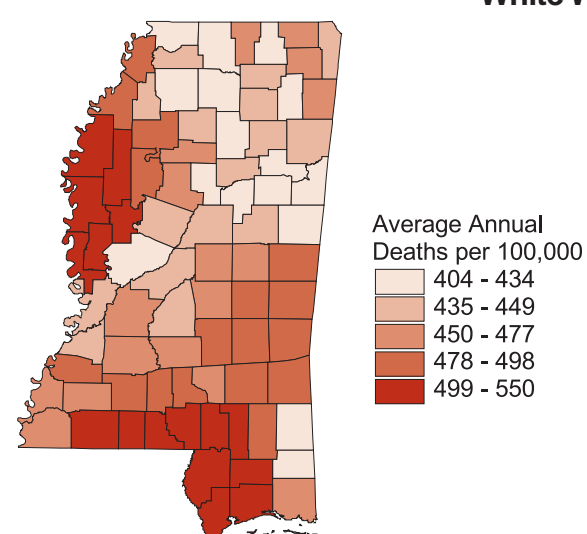
Smoothed County Heart Disease Death Rates, 1991-1995



All Women



White Women

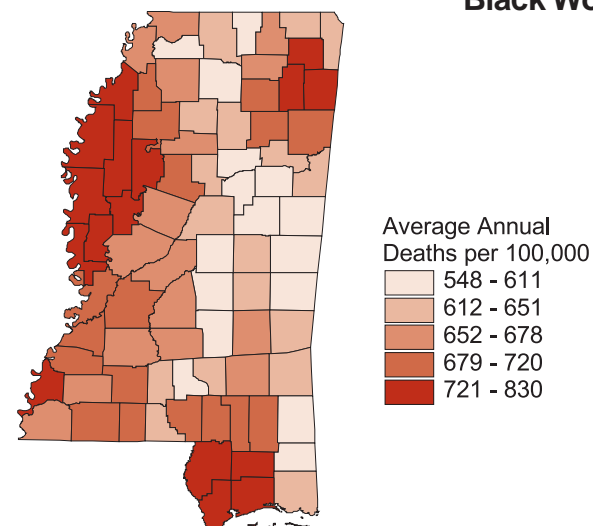


State Profile — Mississippi

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	680,726	531
American Indian and Alaska Native Women	1,728	337
Asian and Pacific Islander Women	3,434	Insufficient Data
Black Women	206,728	686
Hispanic Women	3,600	Insufficient Data
White Women	468,836	472

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

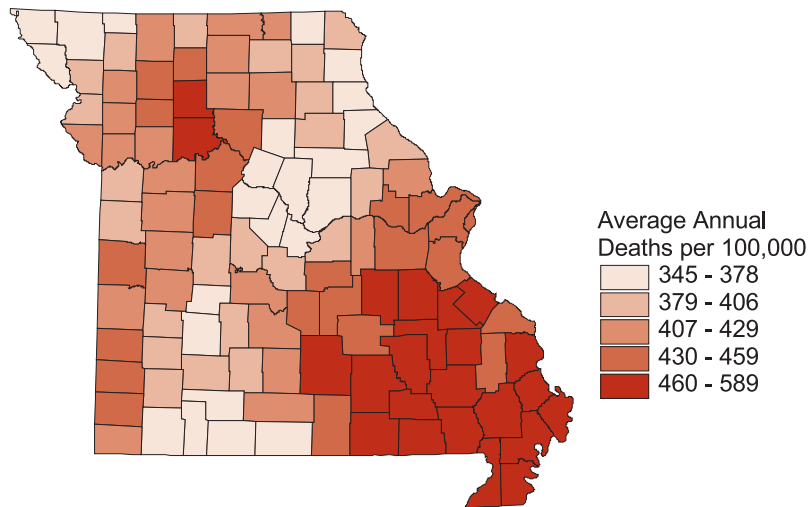


*Walking home from church along
Massachusetts Avenue in Boston,
Massachusetts.*

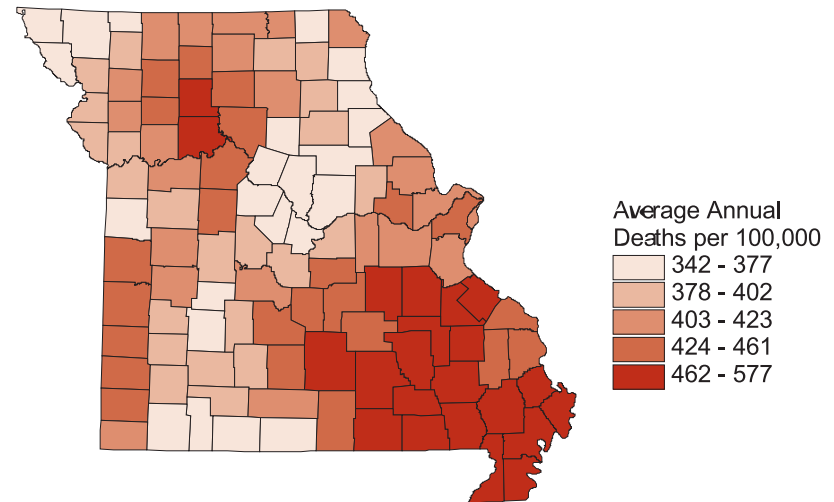


Kenneth Martin, Impact Visuals

All Women



White Women

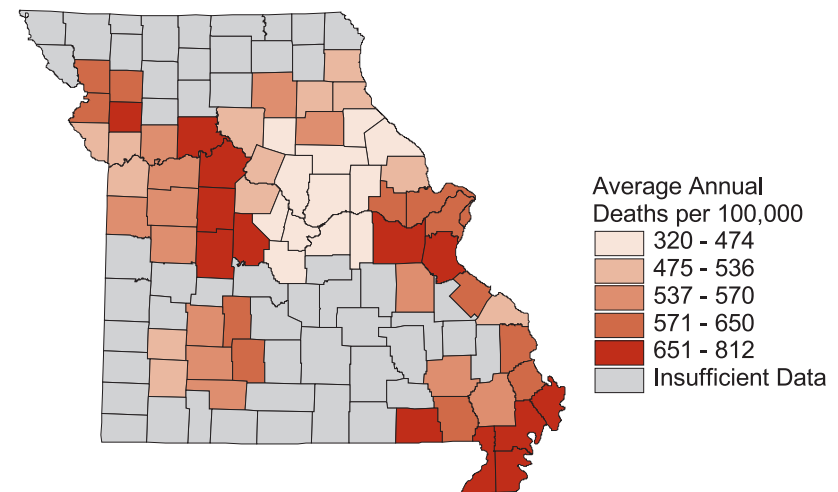


State Profile — Missouri

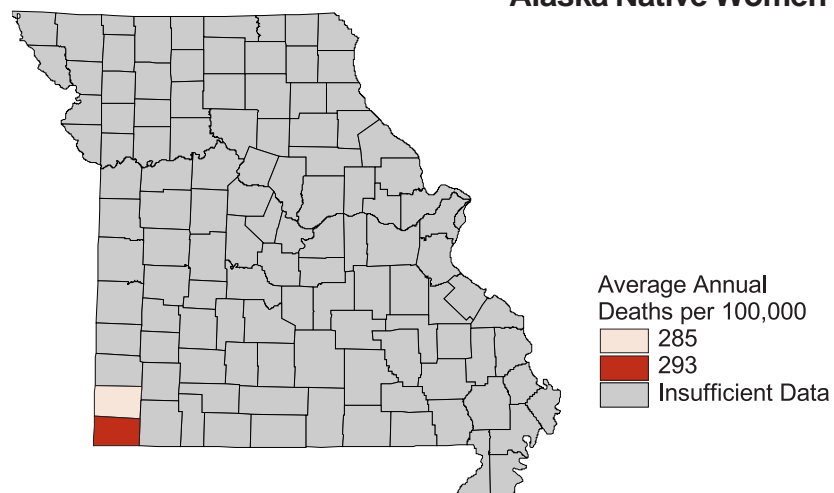
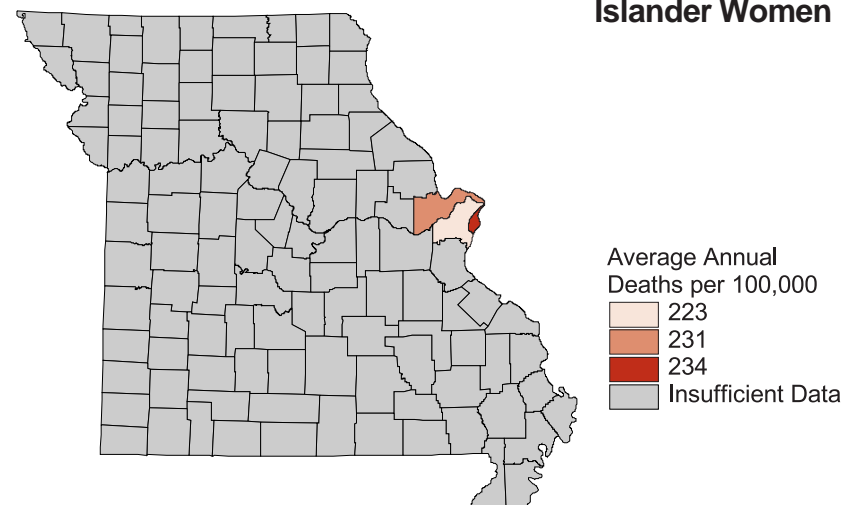
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,427,553	430
American Indian and Alaska Native Women	4,672	182
Asian and Pacific Islander Women	10,978	219
Black Women	134,854	585
Hispanic Women	13,194	248
White Women	1,277,049	417

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

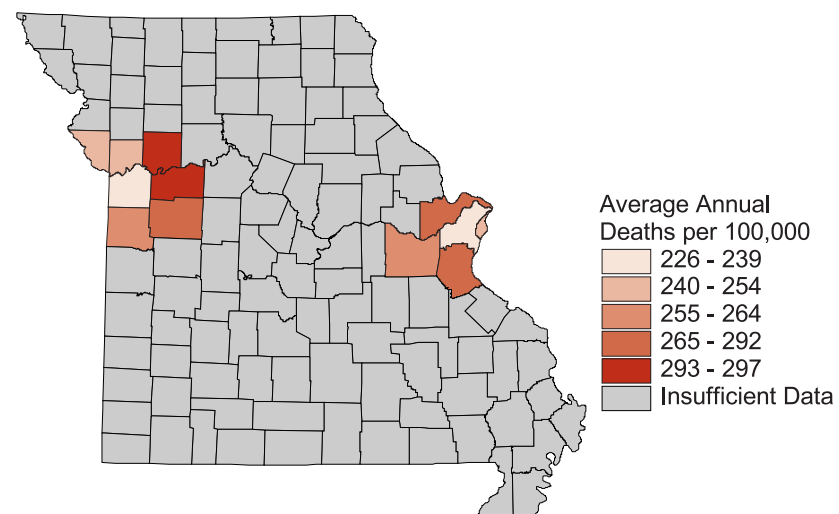
Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

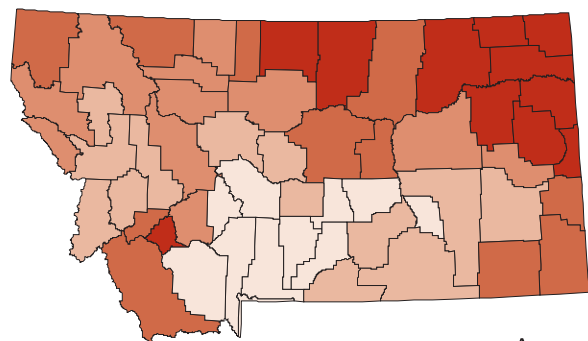
American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

Hispanic Women



Smoothed County Heart Disease Death Rates, 1991-1995

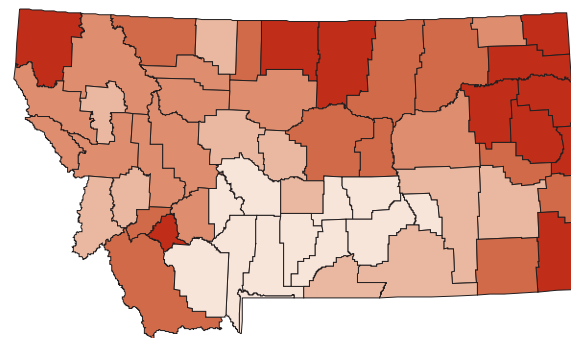
All Women



Average Annual
Deaths per 100,000

- 231 - 273
- 274 - 288
- 289 - 311
- 312 - 326
- 327 - 398

White Women



Average Annual
Deaths per 100,000

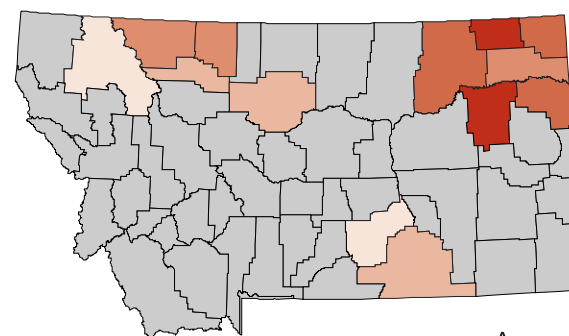
- 232 - 272
- 273 - 287
- 288 - 308
- 309 - 322
- 323 - 399

State Profile — Montana

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	230,331	292
American Indian and Alaska Native Women	8,751	390
Asian and Pacific Islander Women	1,017	Insufficient Data
Black Women	380	Insufficient Data
Hispanic Women	2,545	Insufficient Data
White Women	220,183	289

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

American Indian and
Alaska Native Women



Average Annual
Deaths per 100,000

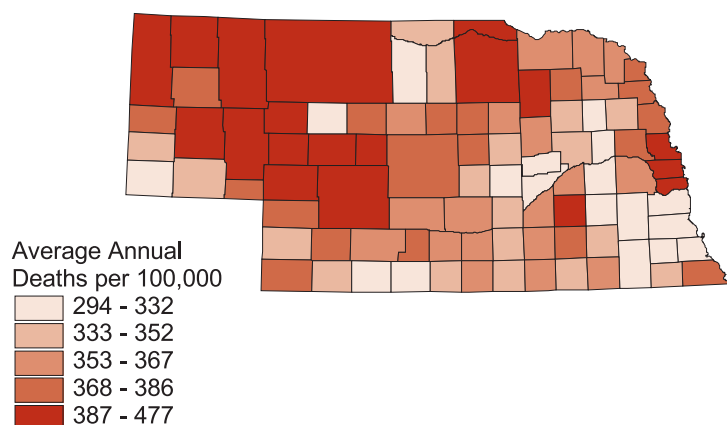
- 363 - 372
- 373 - 421
- 422 - 571
- 572 - 628
- 629 - 640
- Insufficient Data

Portrait of friends.

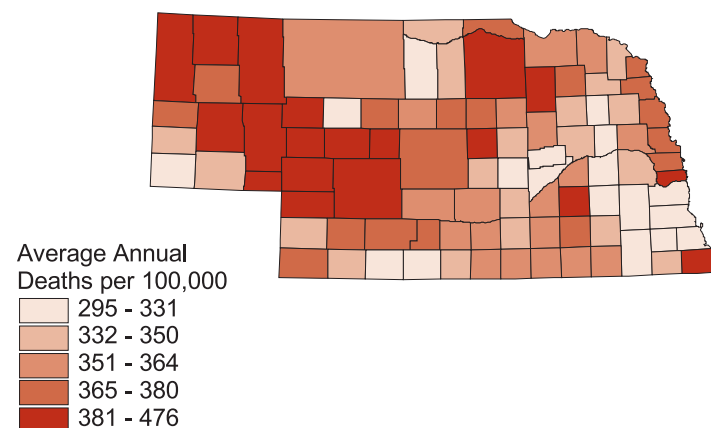


©TSM/John Henley

All Women



White Women

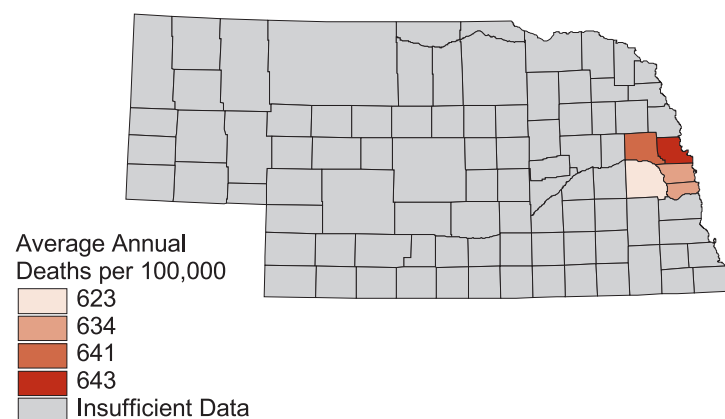


State Profile — Nebraska

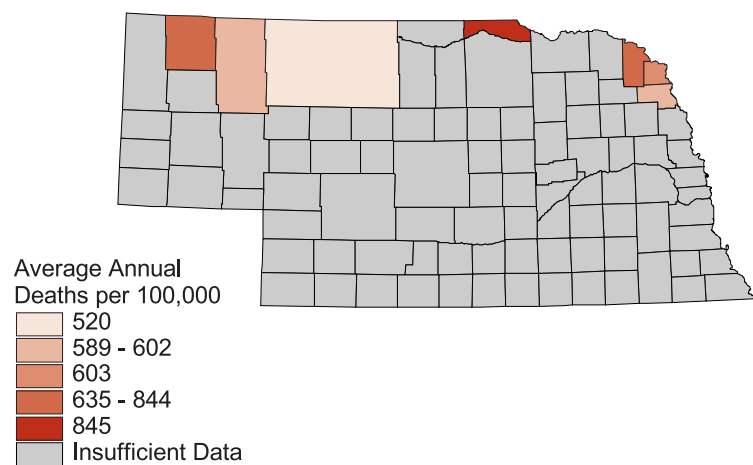
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	428,121	360
American Indian and Alaska Native Women	2,289	603
Asian and Pacific Islander Women	3,284	Insufficient Data
Black Women	12,241	618
Hispanic Women	8,058	151
White Women	410,307	353

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

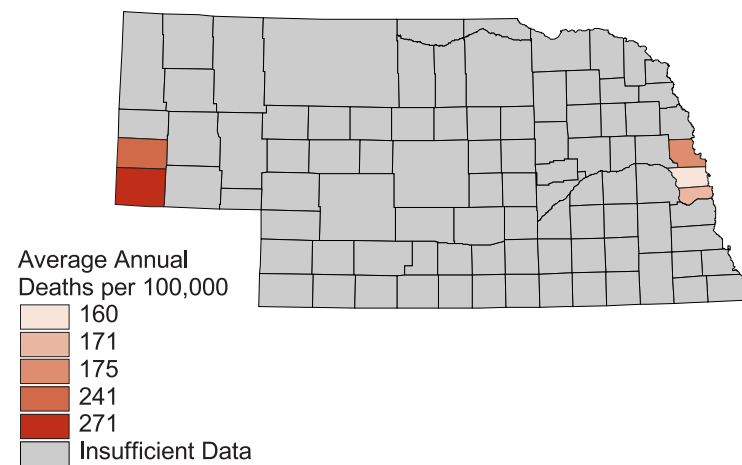
Black Women



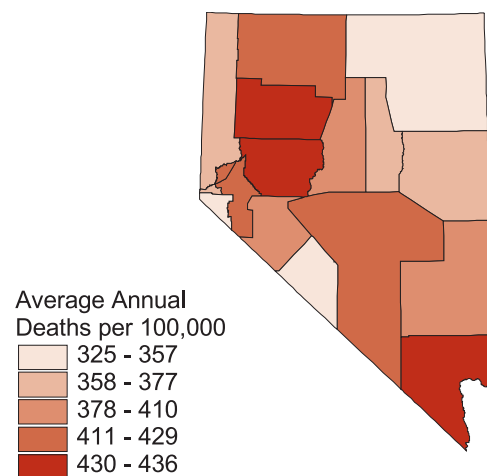
Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native Women

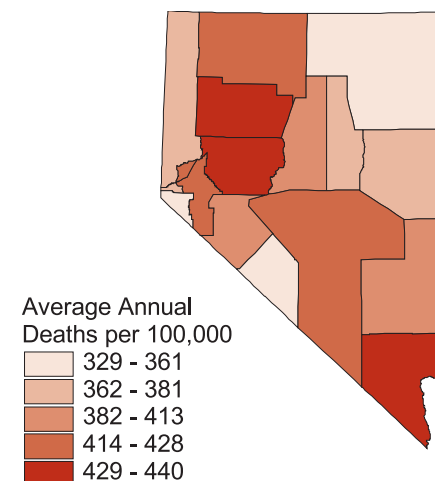
Hispanic Women



All Women



White Women

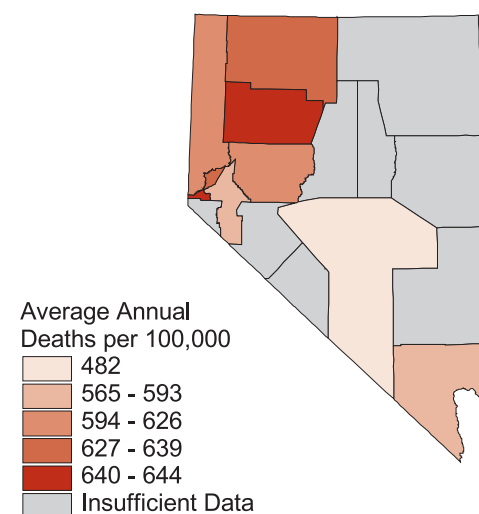


State Profile — Nevada

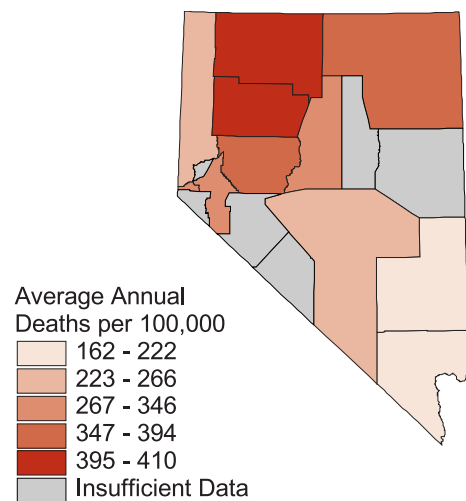
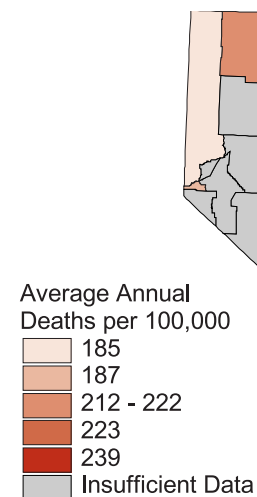
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	374,589	416
American Indian and Alaska Native Women	5,567	277
Asian and Pacific Islander Women	15,808	222
Black Women	21,680	493
Hispanic Women	30,860	180
White Women	331,534	417

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

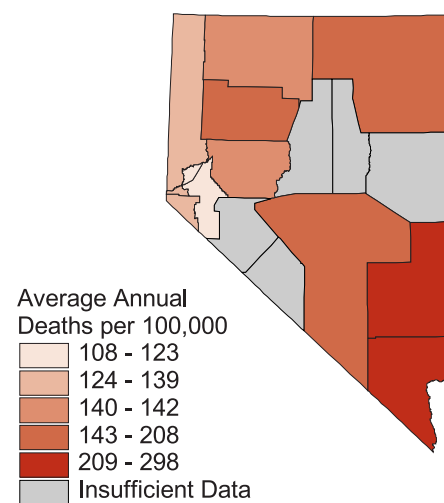
Black Women



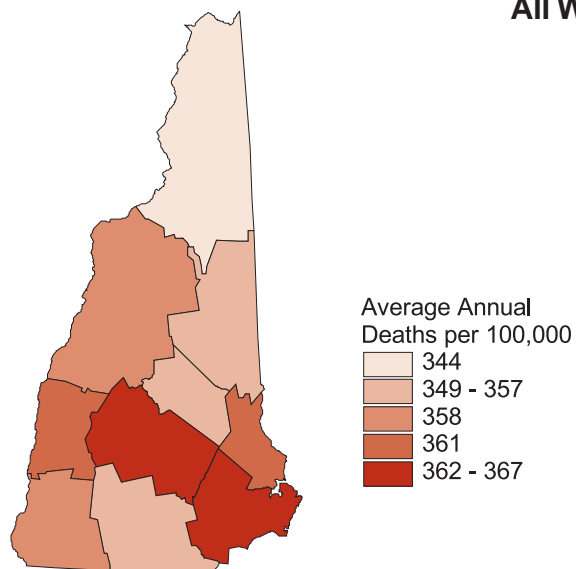
Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

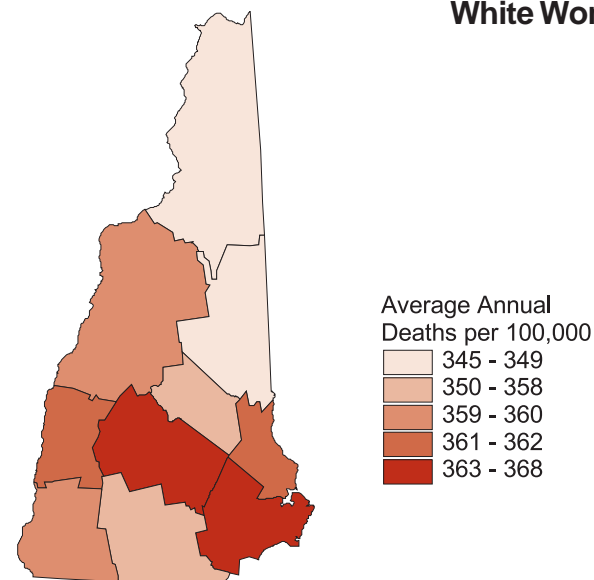
Hispanic Women



All Women



White Women

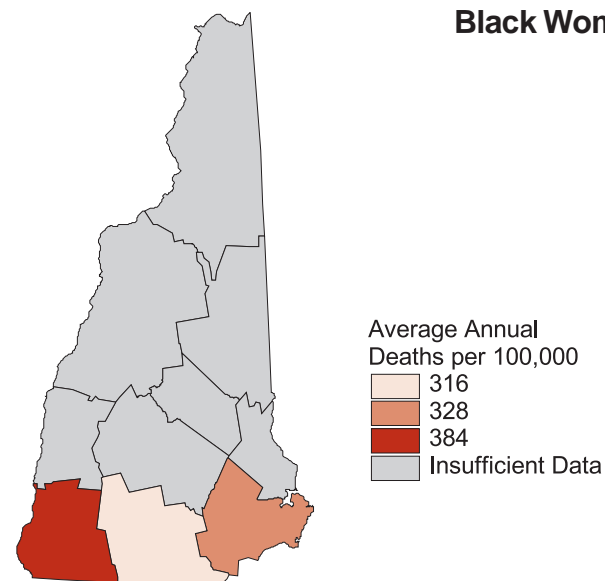


State Profile — New Hampshire

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	296,286	360
American Indian and Alaska Native Women	463	Insufficient Data
Asian and Pacific Islander Women	2,283	Insufficient Data
Black Women	1,256	Insufficient Data
Hispanic Women	2,311	Missing Data
White Women	292,284	361

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

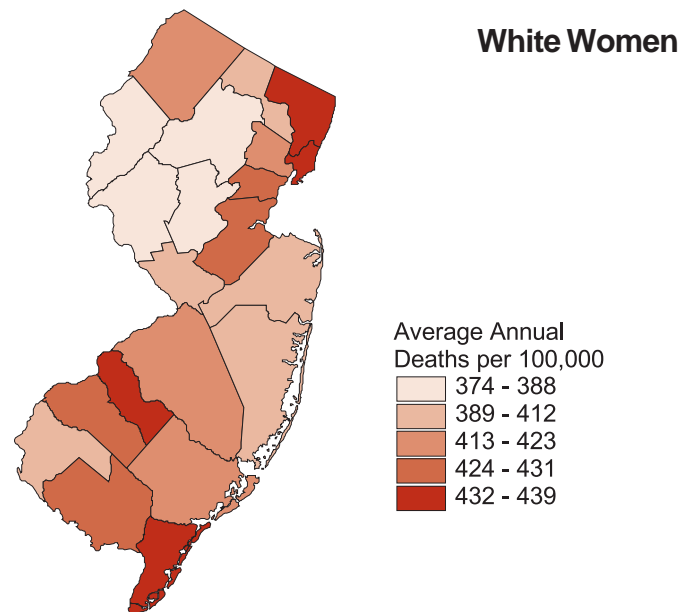
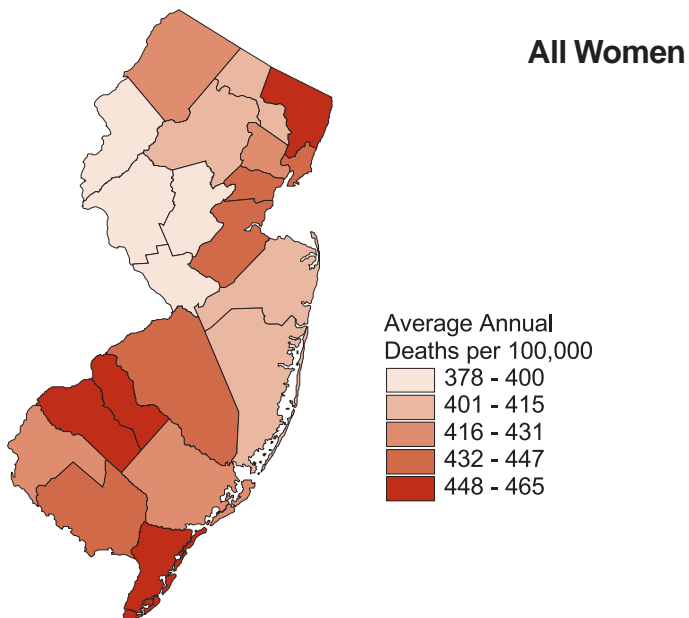
Black Women



***Ninety-seven year old resident of
Detroit, Michigan.***



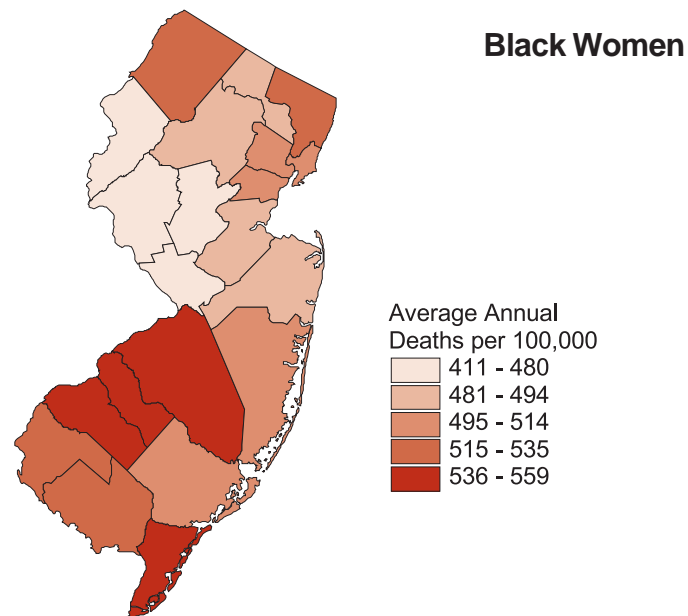
Jim West, Impact Visuals



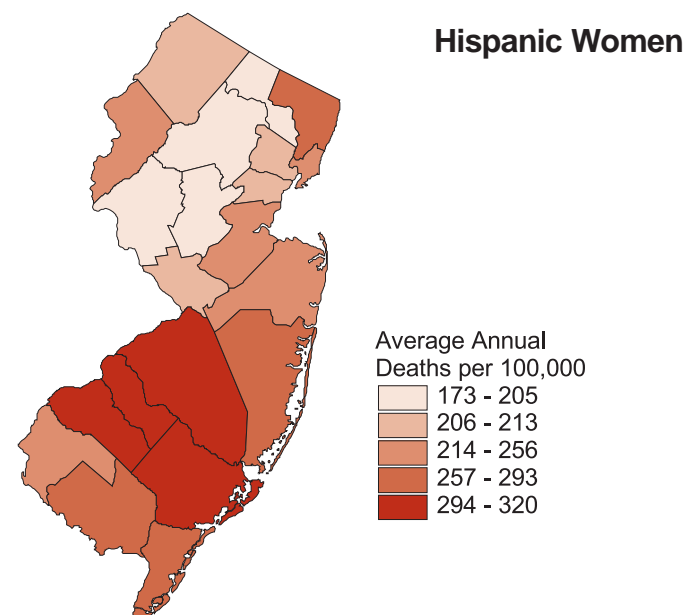
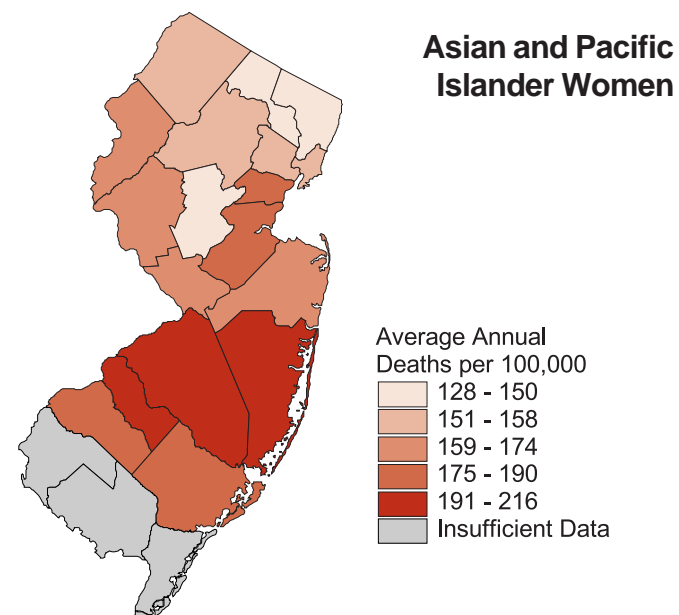
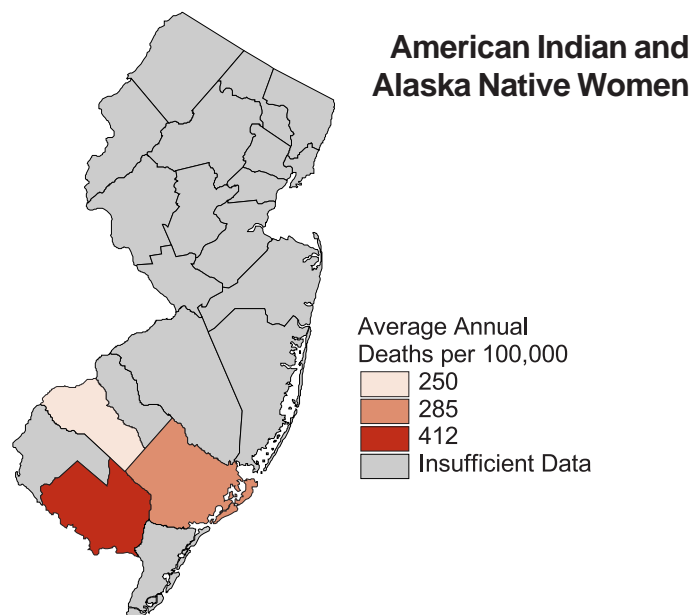
State Profile — New Jersey

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	2,189,302	407
American Indian and Alaska Native Women	4,356	180
Asian and Pacific Islander Women	86,485	147
Black Women	265,616	490
Hispanic Women	178,286	210
White Women	1,832,845	399

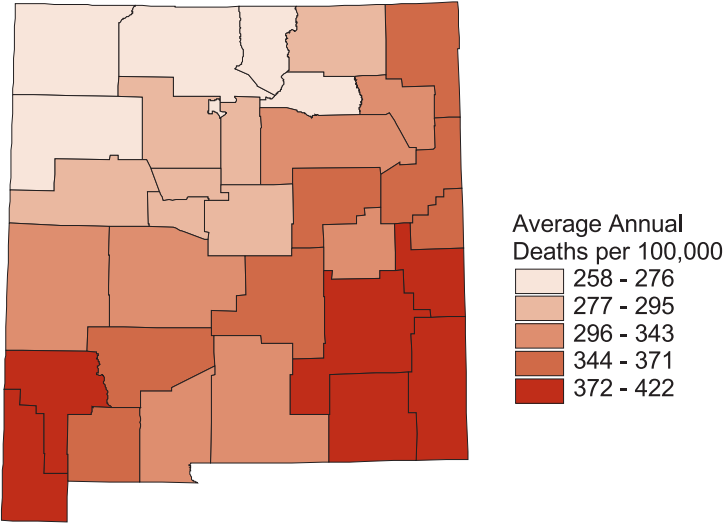
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.



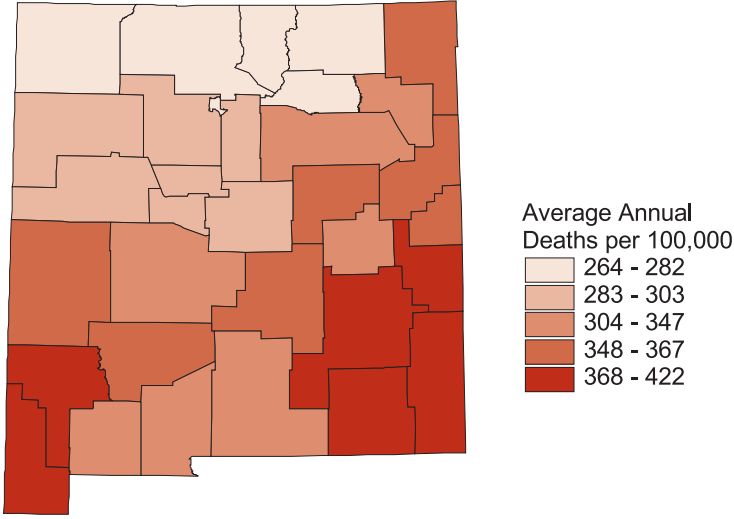
Smoothed County Heart Disease Death Rates, 1991-1995



All Women



White Women

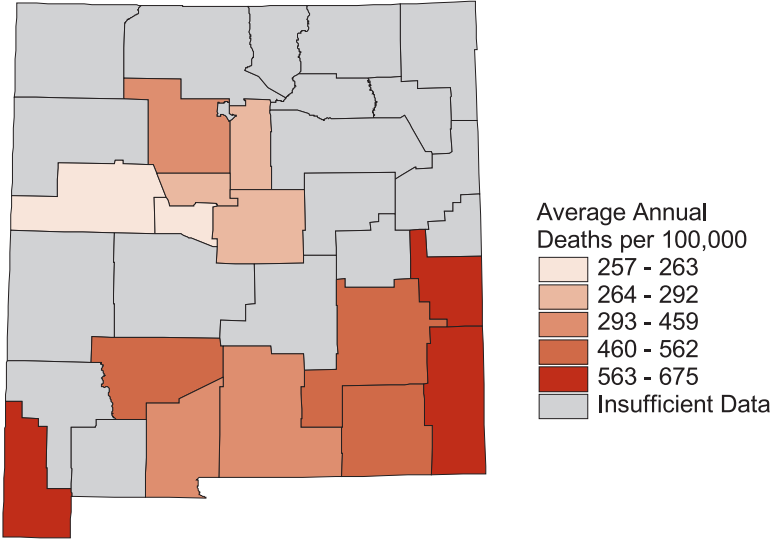


State Profile — New Mexico

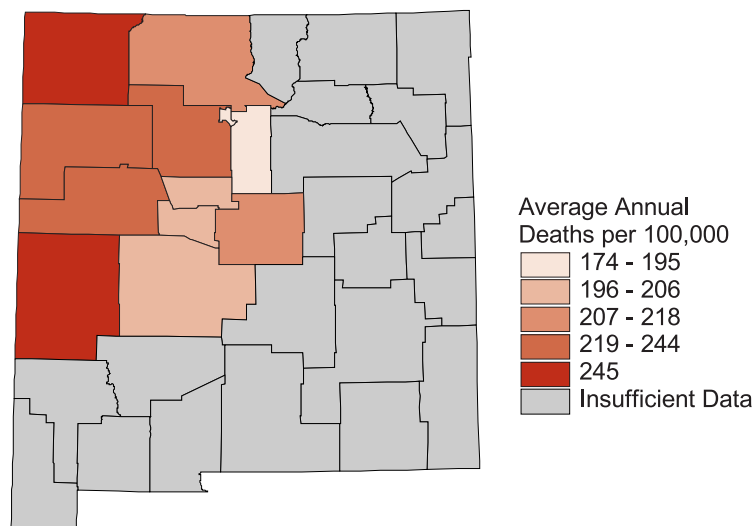
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	412,053	315
American Indian and Alaska Native Women	26,714	213
Asian and Pacific Islander Women	4,726	Insufficient Data
Black Women	7,878	408
Hispanic Women	134,004	282
White Women	372,735	320

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

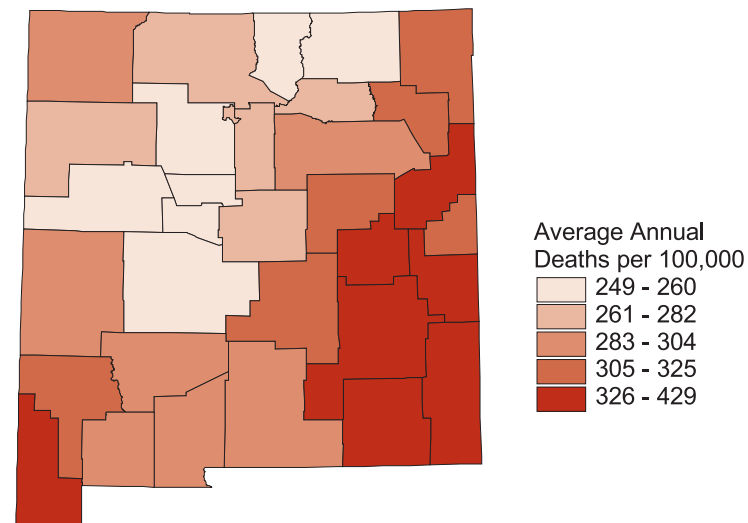
Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

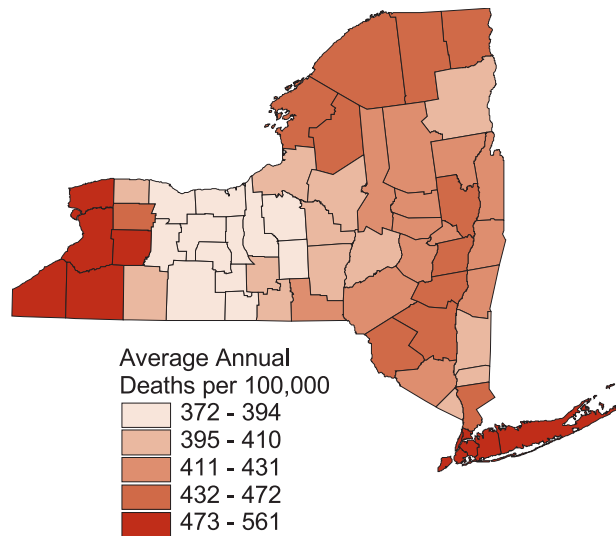
American Indian and
Alaska Native Women

Hispanic Women

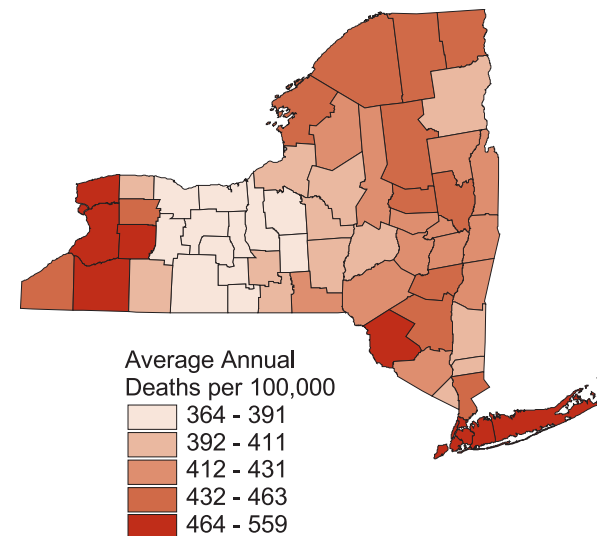


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

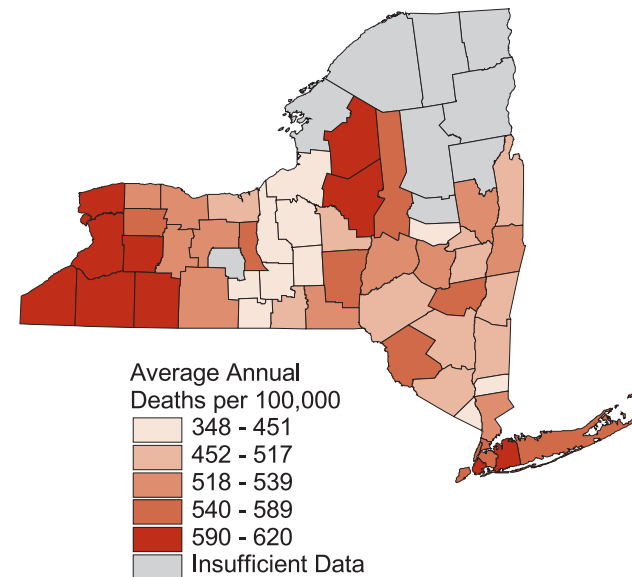


State Profile — New York

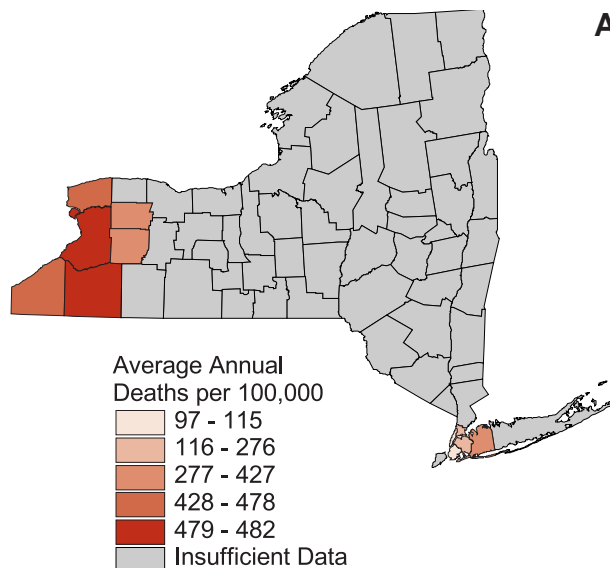
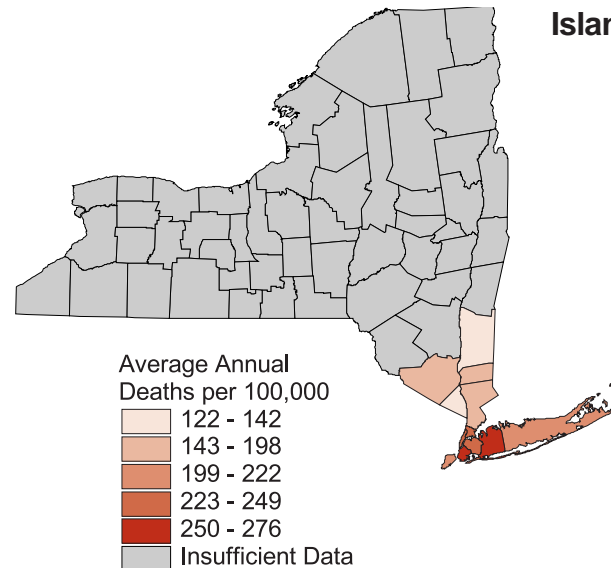
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	4,929,714	487
American Indian and Alaska Native Women	15,646	212
Asian and Pacific Islander Women	198,243	236
Black Women	769,949	573
Hispanic Women	521,506	307
White Women	3,945,876	477

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

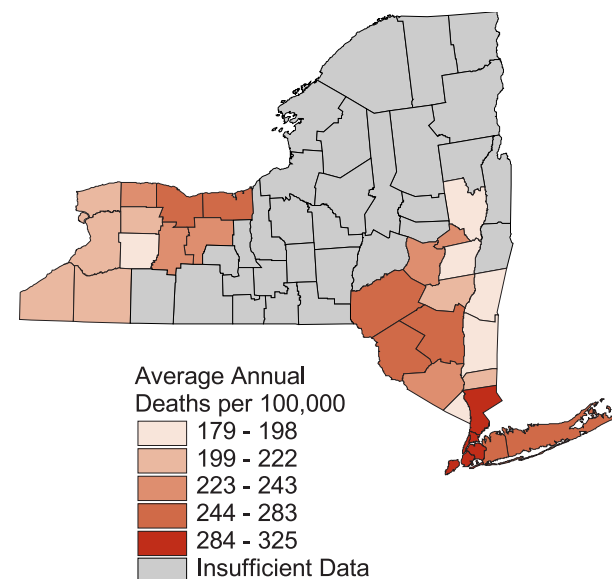
Black Women



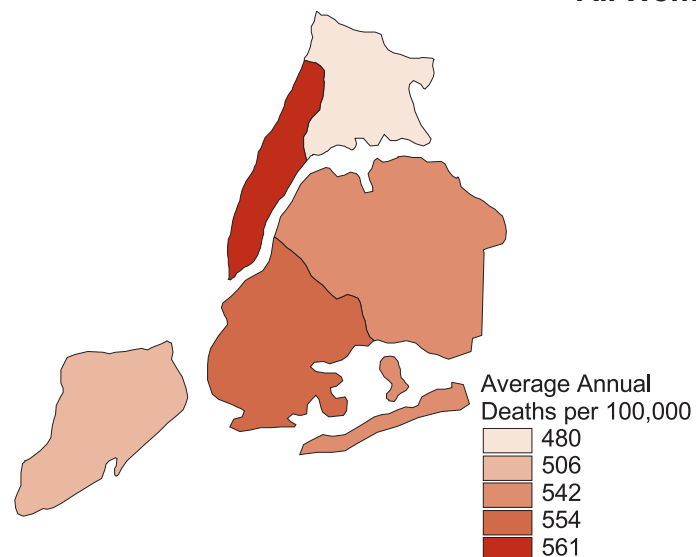
Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native
WomenAsian and Pacific
Islander Women

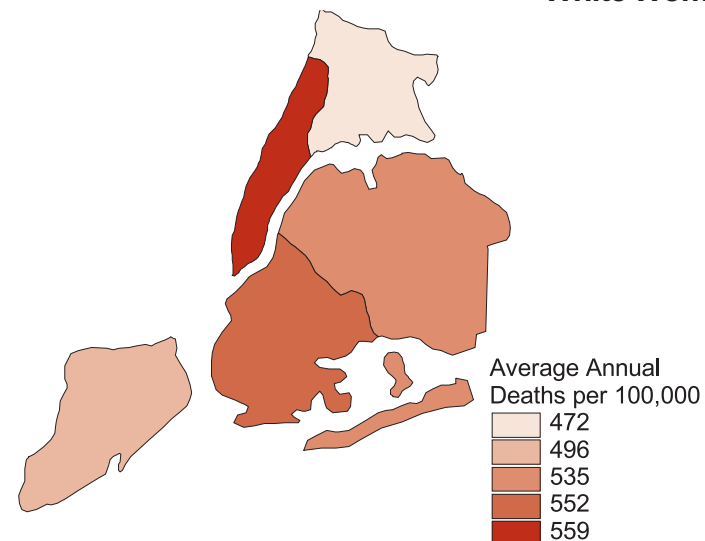
Hispanic Women



All Women



White Women

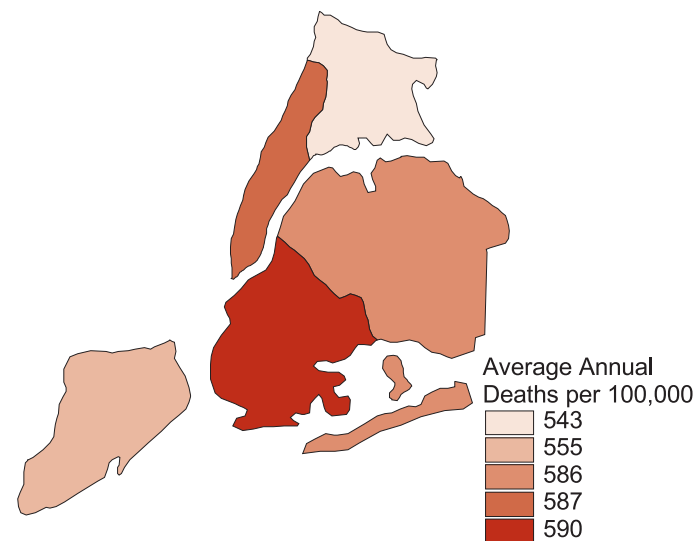


New York City Profile

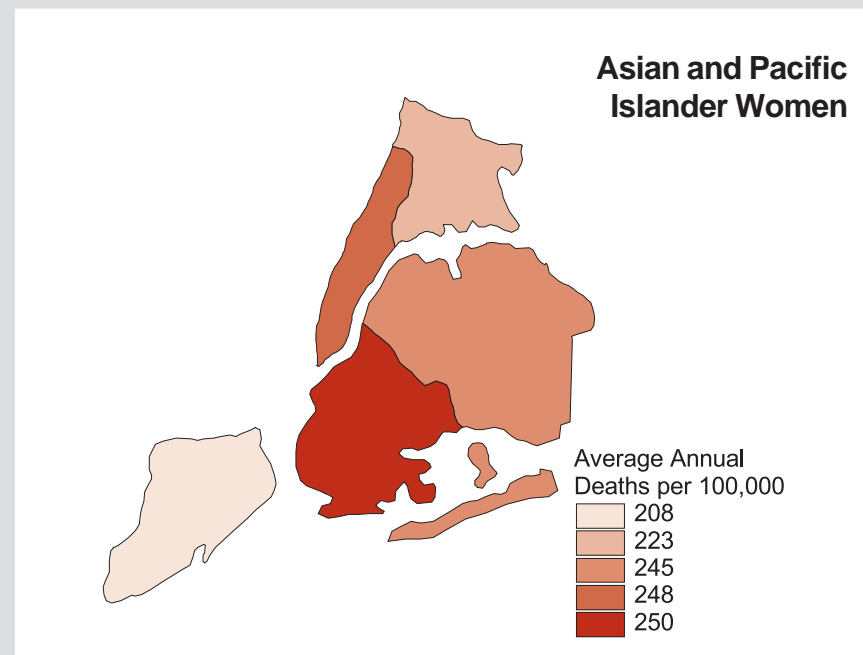
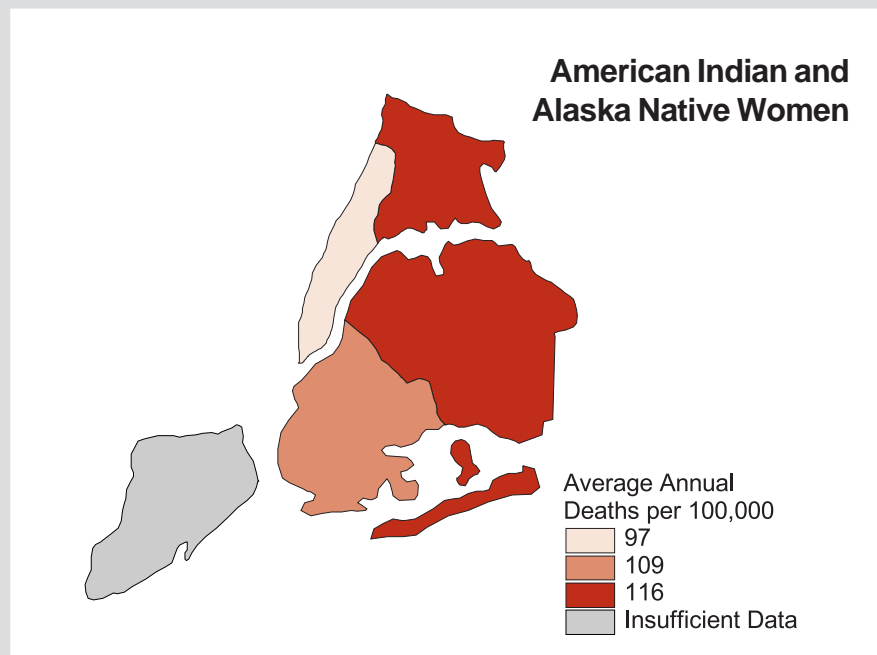
Race or Ethnicity	City Population 1995	City Heart Disease Death Rate, 1991-1995*
All Women	2,019,225	561
American Indian and Alaska Native Women	7,227	97
Asian and Pacific Islander Women	147,202	248
Black Women	589,674	587
Hispanic Women	431,080	320
White Women	1,275,122	559

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

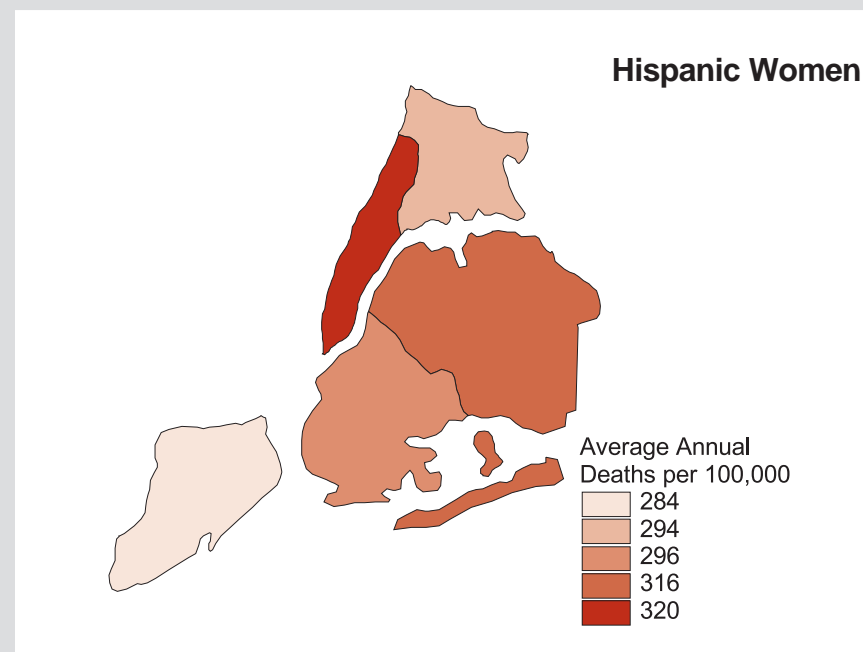


During 1991-1993, information on Hispanic origin was not reported on approximately 22% of heart disease death certificates for women aged 35 years and older residing in New York City. During 1994-1995, the percent of death certificates for women that were missing information on Hispanic origin dropped to less than 3%. Based on a detailed examination of the New York City death certificate data for our five-year study period, we concluded that the majority of the deaths with “unknown” Hispanic origin occurred among non-Hispanic women. As evident in the table below, the percent of heart disease deaths for Hispanic women rose only slightly between 1991-1993 and 1994-1995, while the percent of heart disease deaths for non-Hispanic women rose markedly after reporting improved in 1994. From 1991-1993 to 1994-1995, the average annual number of heart disease deaths increased 7% for Hispanic women and 22% for non-Hispanic women, while the number of deaths with unknown Hispanic origin declined 96%.

However, since a small proportion of the deaths with missing Hispanic origin data did occur among Hispanic women, it is almost certain that the heart disease death rates reported here for Hispanic women are modestly (but not severely) underestimated. In addition, the extent of underestimation may have varied among the five city boroughs; therefore prudence should be exercised in comparing individual county rates.

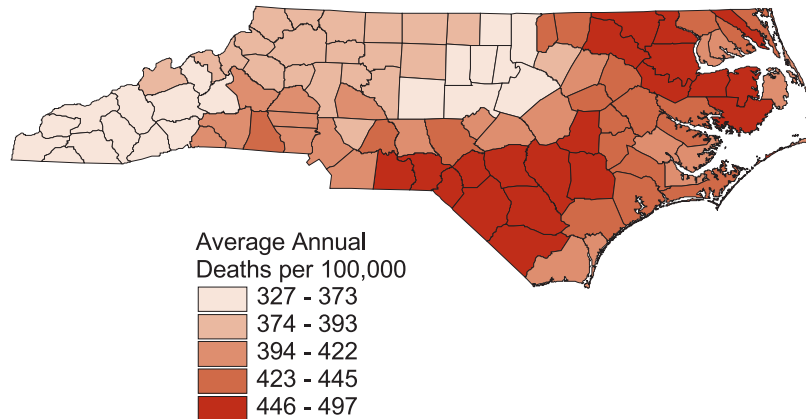
Percent Distribution of Heart Disease Deaths by Hispanic Origin for Women in New York City, 1991-1995

Hispanic Origin	1991	1992	1993	1994	1995
Non-Hispanic	74.0	71.0	70.3	89.6	90.4
Hispanic	6.7	6.7	6.3	7.2	7.4
Unknown	19.3	22.3	23.5	3.3	2.2

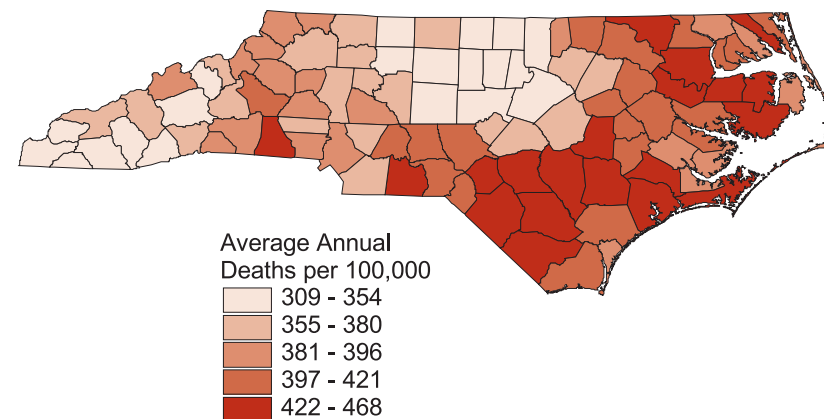


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women



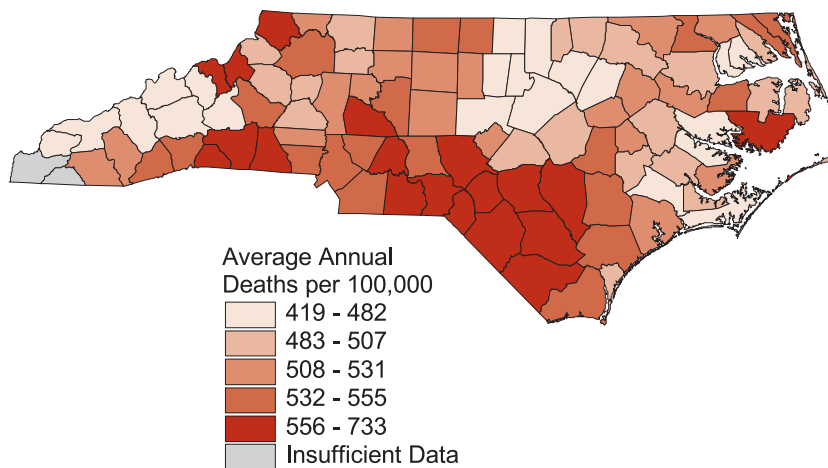
State Profile — North Carolina

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,902,353	400
American Indian and Alaska Native Women	18,118	485
Asian and Pacific Islander Women	16,052	174
Black Women	372,023	513
Hispanic Women	15,013	74
White Women	1,496,160	375

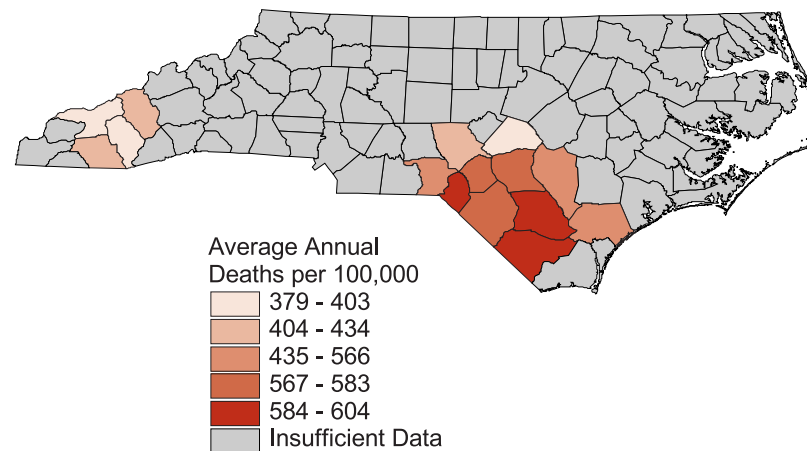
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

Black Women

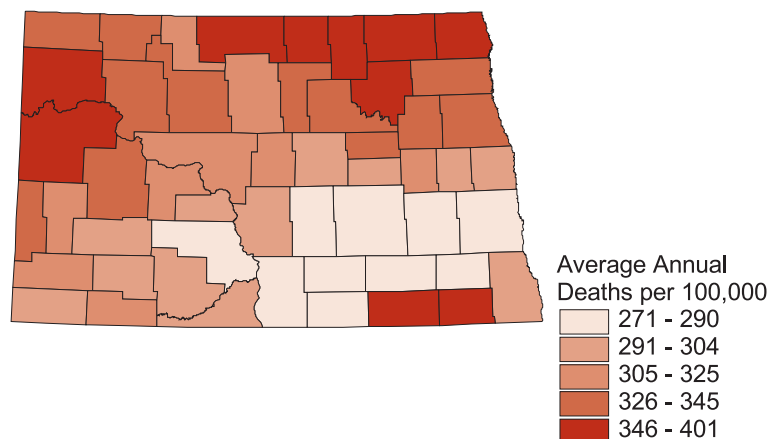


American Indian and Alaska Native Women

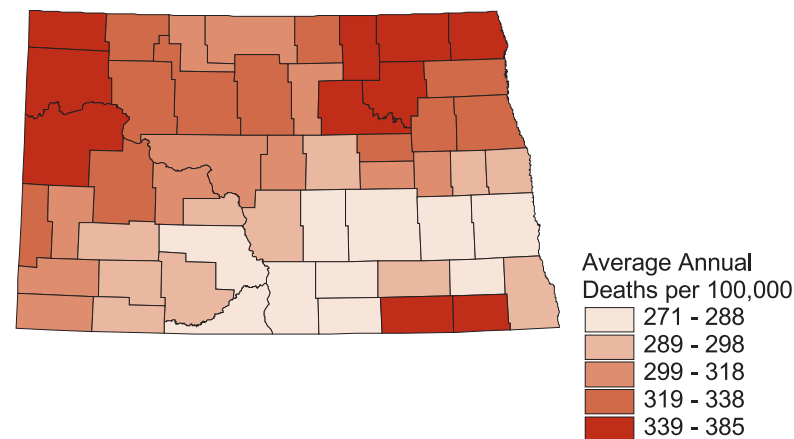


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

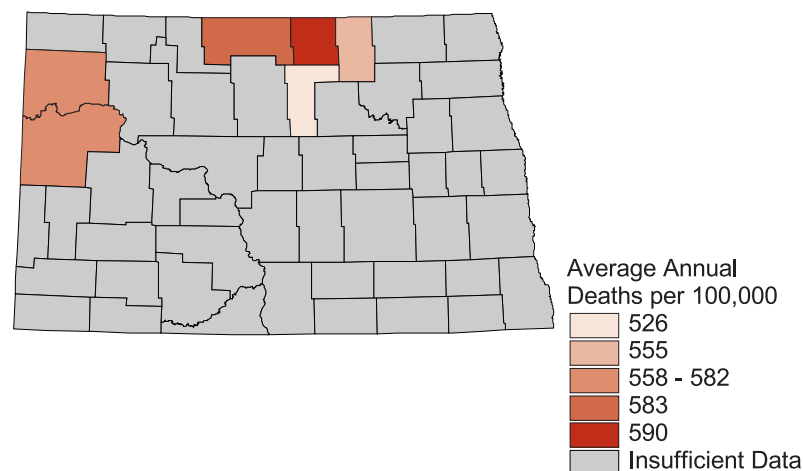


State Profile — North Dakota

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	163,941	307
American Indian and Alaska Native Women	4,264	525
Asian and Pacific Islander Women	868	Insufficient Data
Black Women	319	Insufficient Data
Hispanic Women	659	Insufficient Data
White Women	158,490	303

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

American Indian and Alaska Native Women

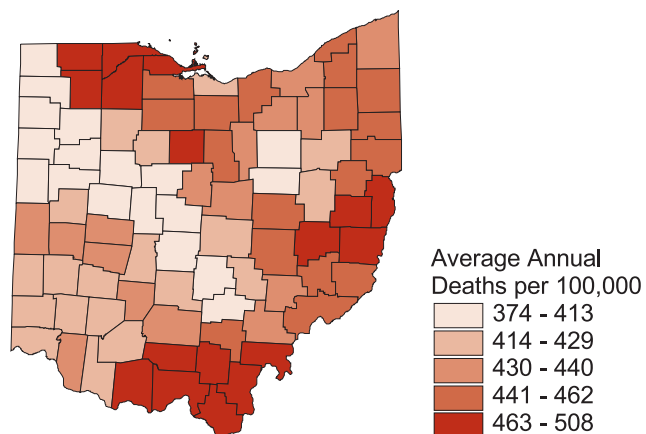


*Resident of Allen Parkway Village
in Houston, Texas.*

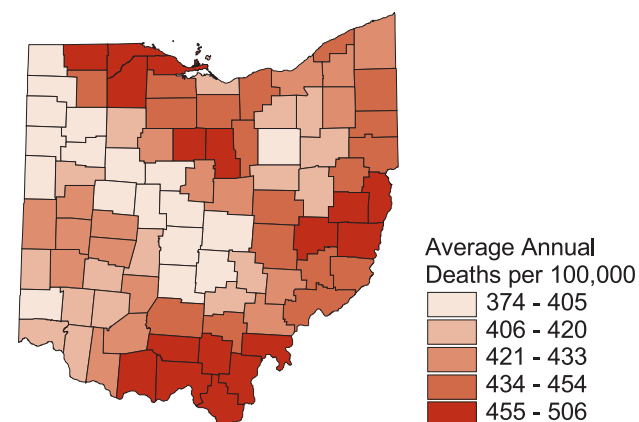


Sharon Stewart, Impact Visuals

All Women



White Women

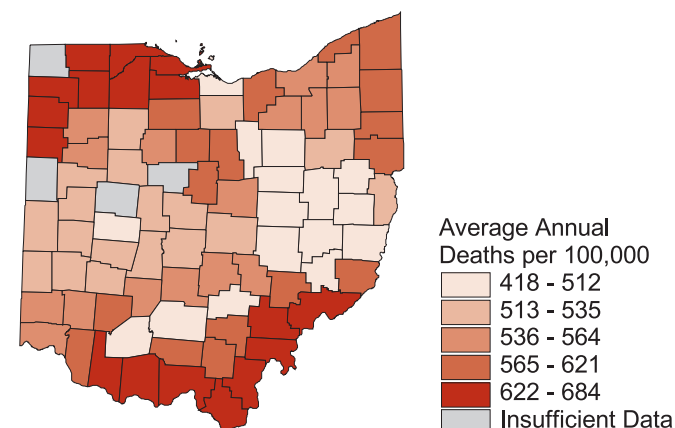


State Profile — Ohio

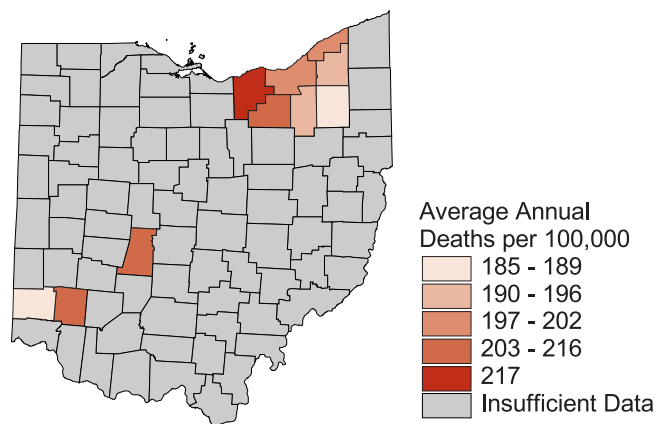
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	2,987,355	437
American Indian and Alaska Native Women	5,255	129
Asian and Pacific Islander Women	24,325	194
Black Women	294,545	556
Hispanic Women	29,027	157
White Women	2,663,230	426

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

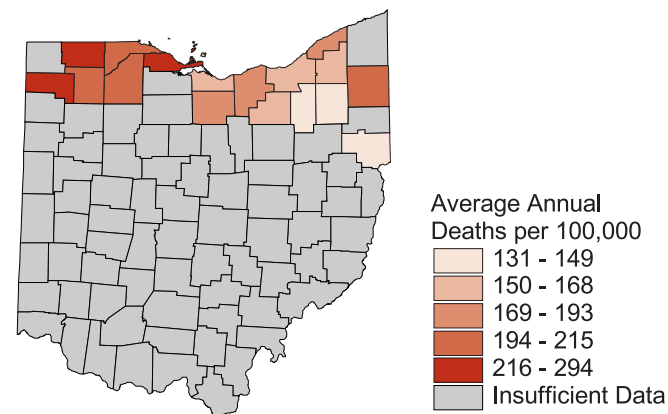
Black Women



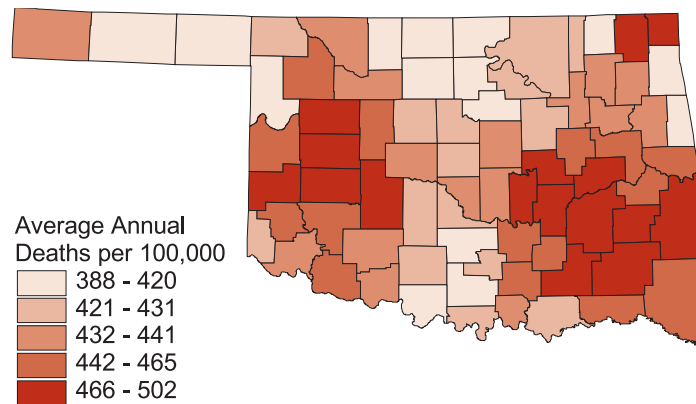
Smoothed County Heart Disease Death Rates, 1991-1995

Asian and Pacific
Islander Women

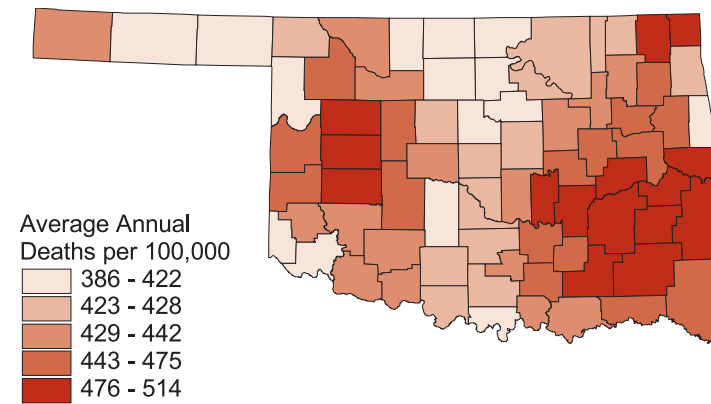
Hispanic Women



All Women



White Women



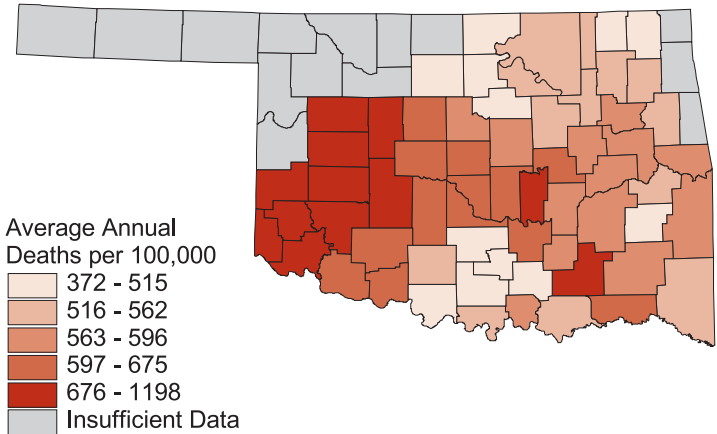
State Profile — Oklahoma

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	862,701	440
American Indian and Alaska Native Women	53,204	278
Asian and Pacific Islander Women	8,588	216
Black Women	52,022	582
Hispanic Women	15,176	Insufficient Data
White Women	748,887	442

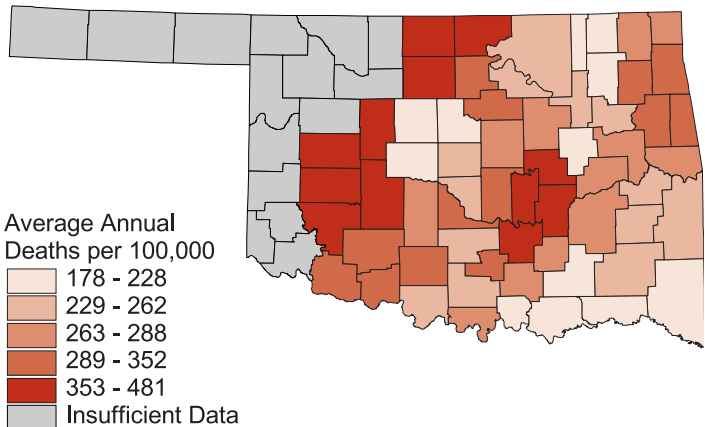
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

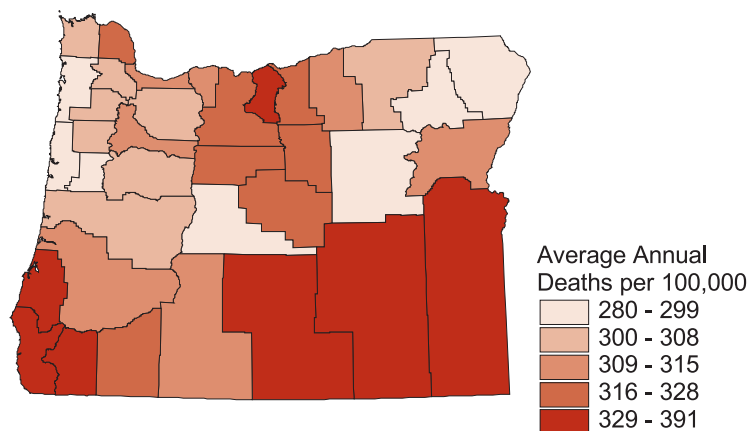
Black Women



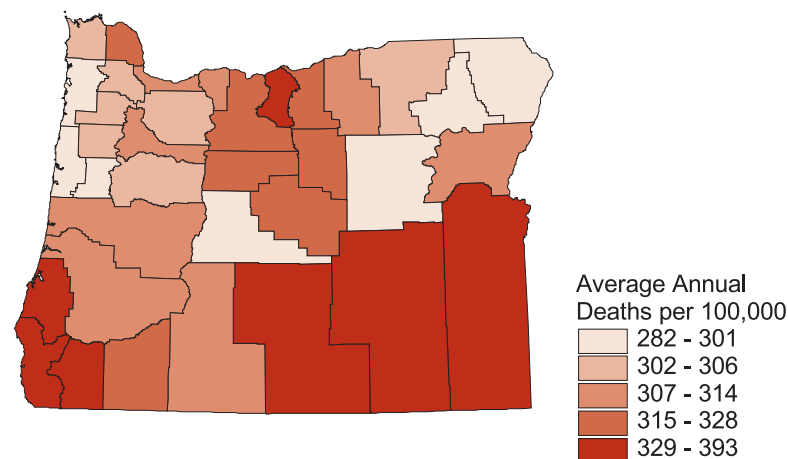
American Indian and Alaska Native Women



All Women



White Women

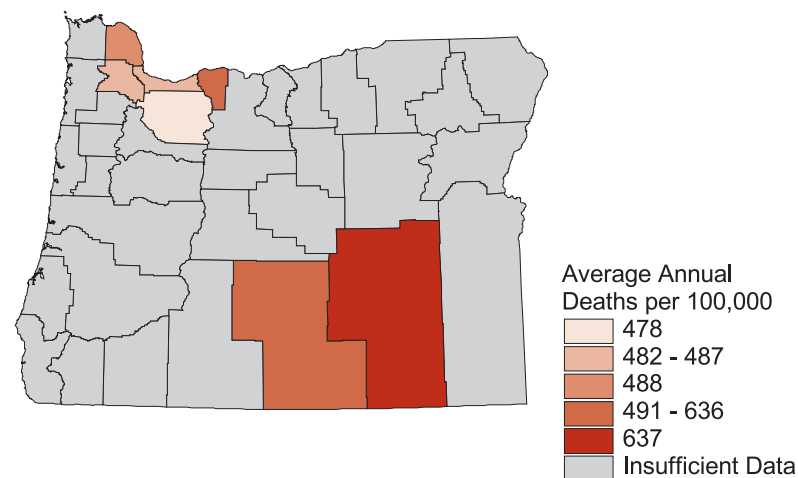


State Profile — Oregon

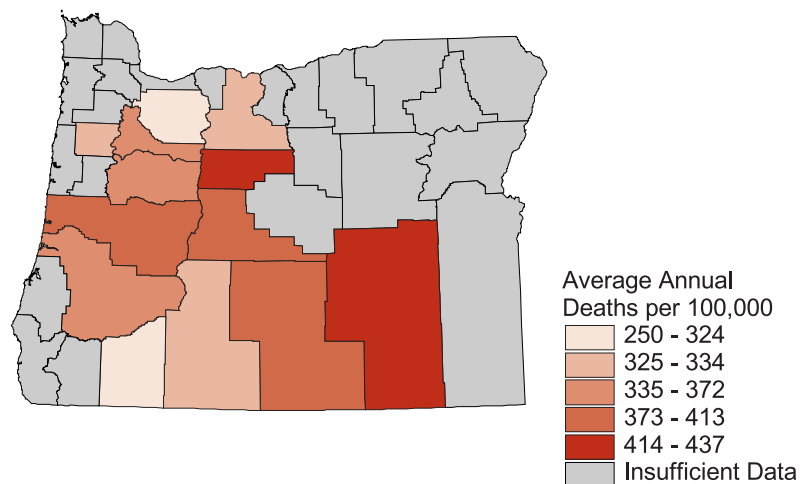
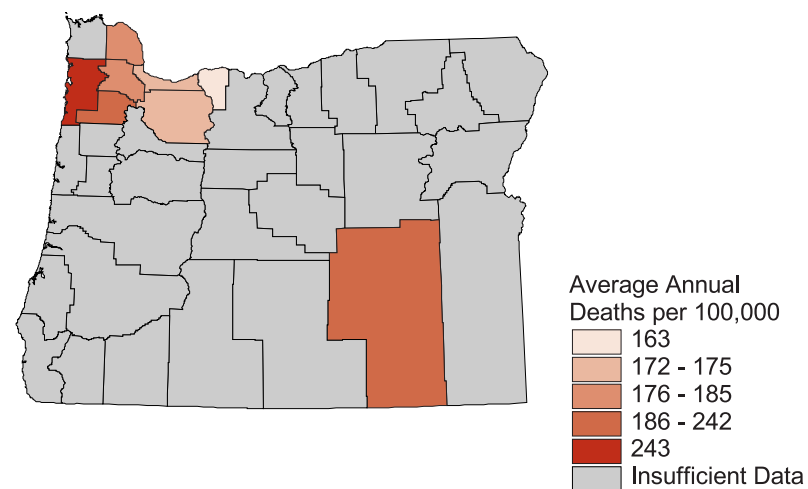
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	848,184	307
American Indian and Alaska Native Women	8,954	277
Asian and Pacific Islander Women	19,208	187
Black Women	10,036	463
Hispanic Women	21,680	142
White Women	809,986	307

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

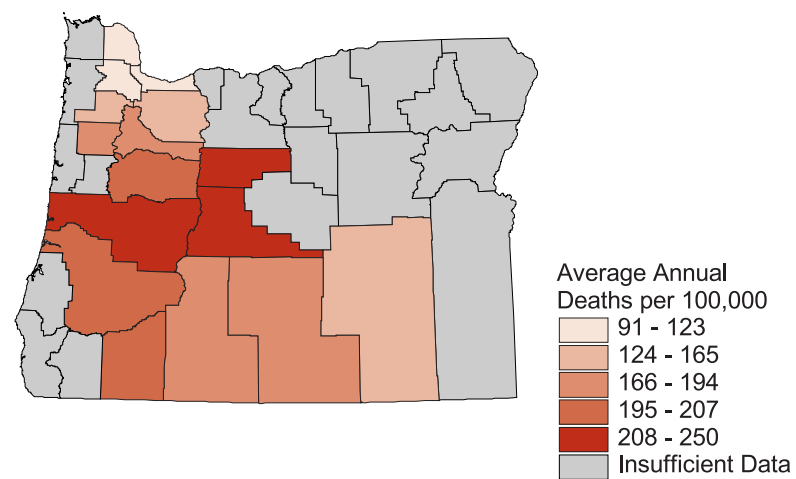
Black Women



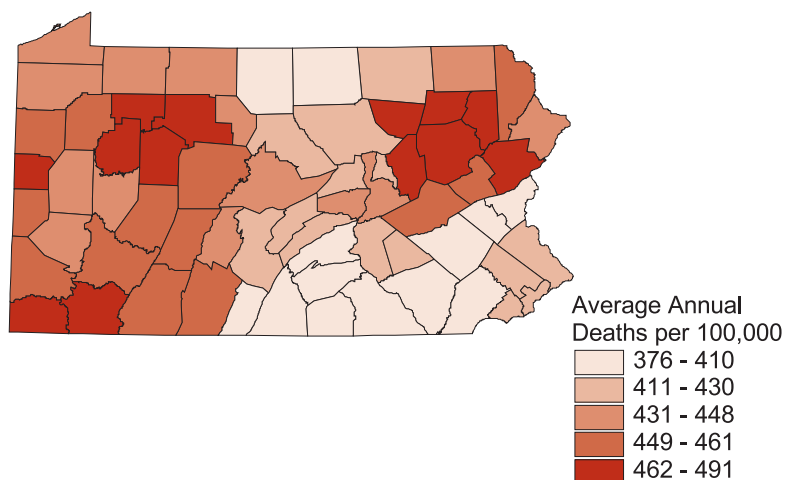
Smoothed County Heart Disease Death Rates, 1991-1995

American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

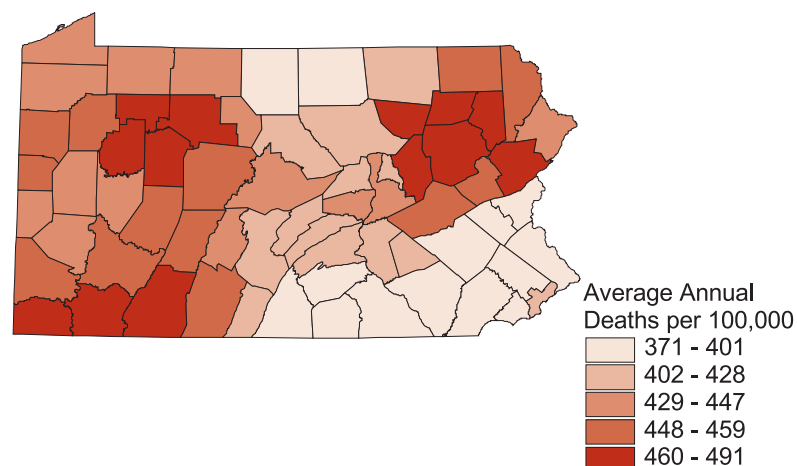
Hispanic Women



All Women



White Women

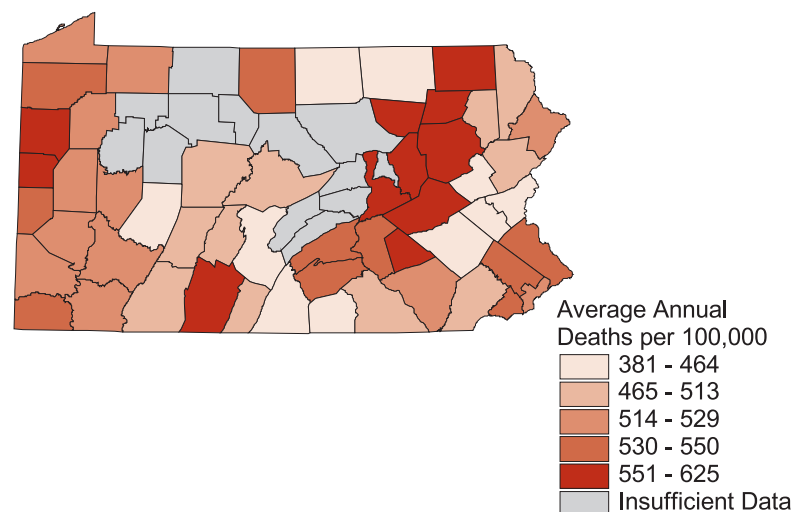


State Profile — Pennsylvania

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	3,435,632	433
American Indian and Alaska Native Women	3,868	106
Asian and Pacific Islander Women	36,363	196
Black Women	283,564	532
Hispanic Women	46,254	278
White Women	3,111,837	425

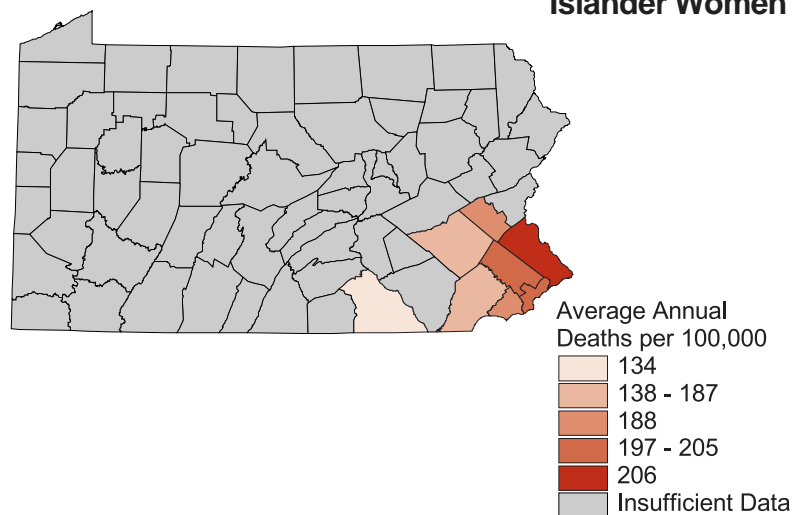
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

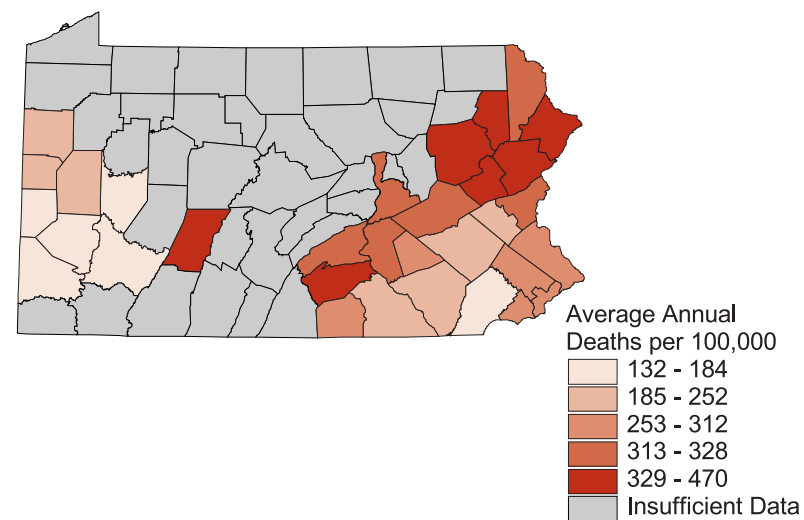


Smoothed County Heart Disease Death Rates, 1991-1995

Asian and Pacific Islander Women

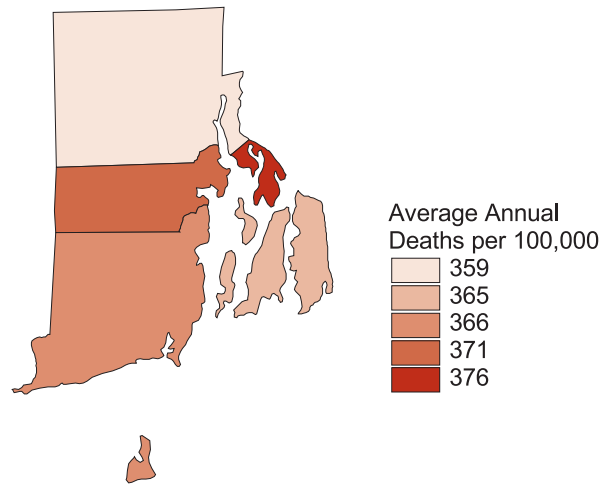


Hispanic Women

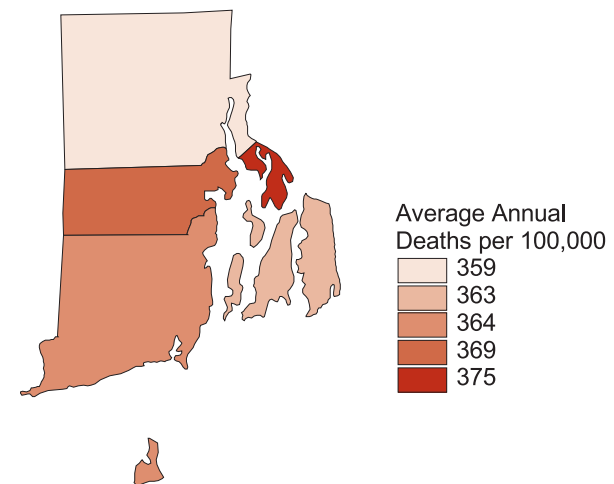


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

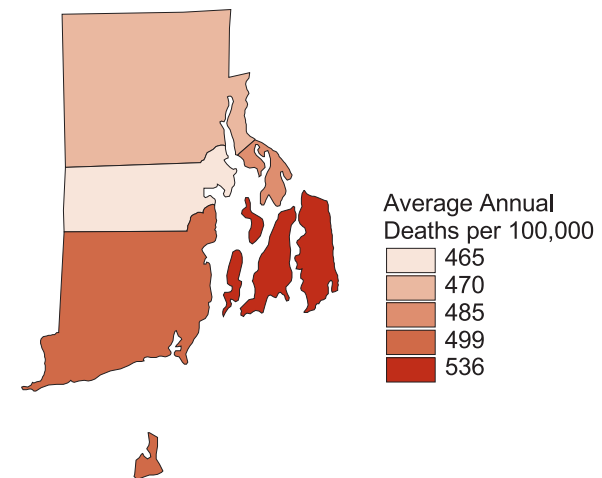


State Profile — Rhode Island

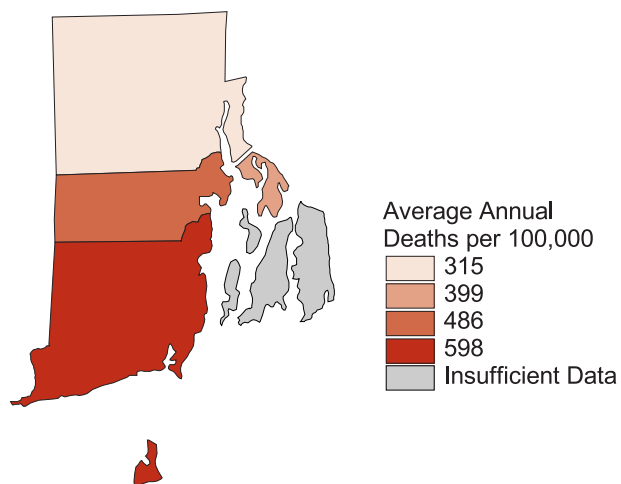
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	274,257	371
American Indian and Alaska Native Women	930	442
Asian and Pacific Islander Women	3,563	Insufficient Data
Black Women	8,855	461
Hispanic Women	9,380	150
White Women	260,909	370

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

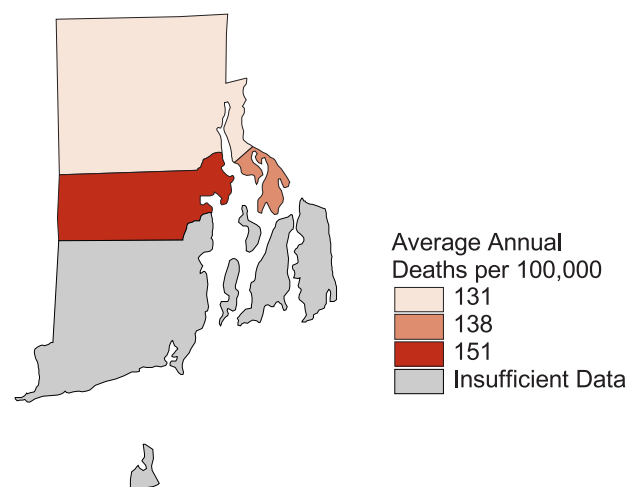
Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

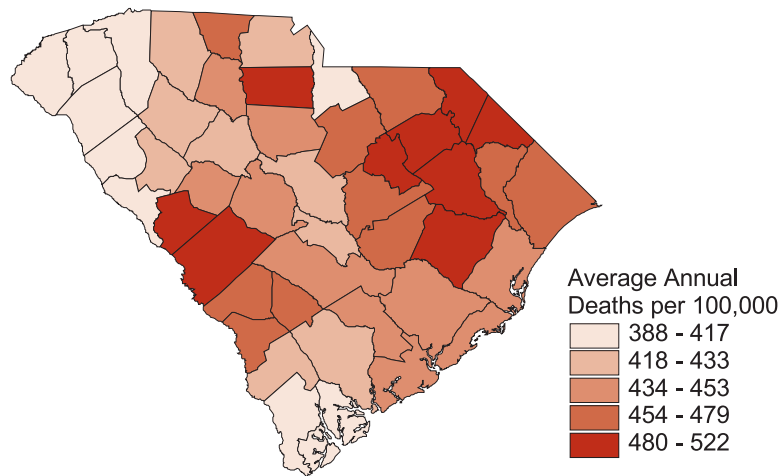
American Indian and
Alaska Native Women

Hispanic Women

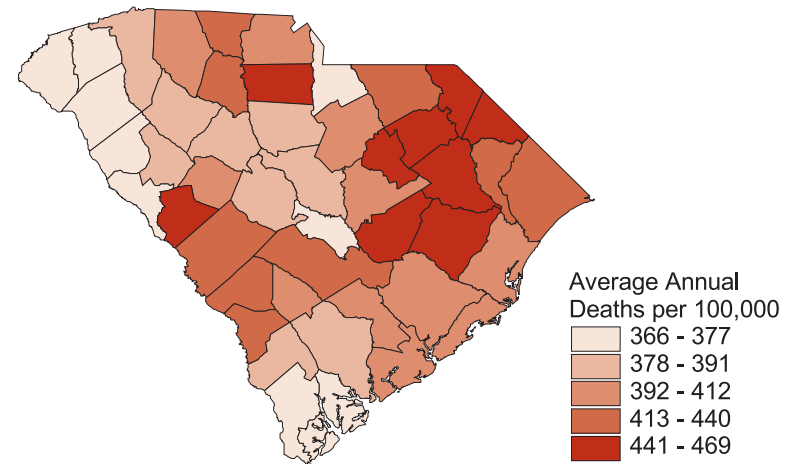


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women



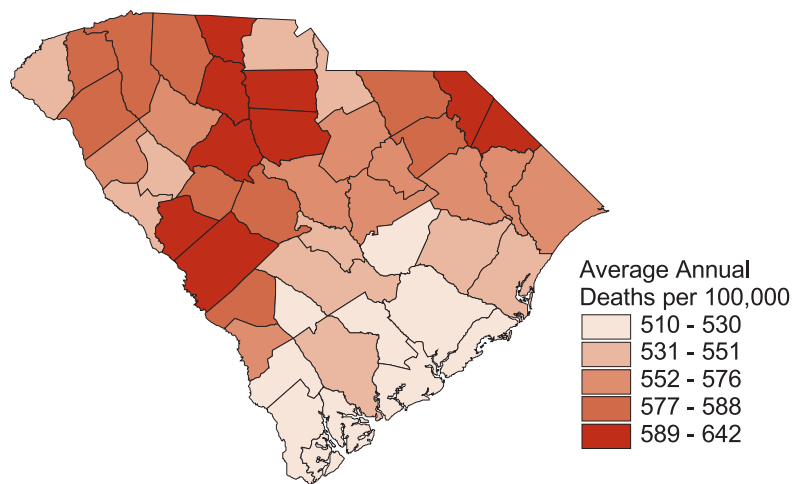
State Profile — South Carolina

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	953,621	438
American Indian and Alaska Native Women	1,693	Insufficient Data
Asian and Pacific Islander Women	6,518	167
Black Women	252,836	562
Hispanic Women	6,351	132
White Women	692,574	399

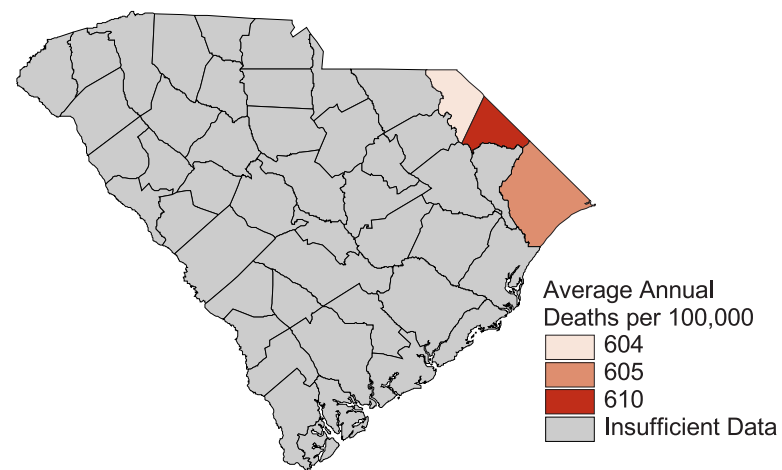
* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Smoothed County Heart Disease Death Rates, 1991-1995

Black Women

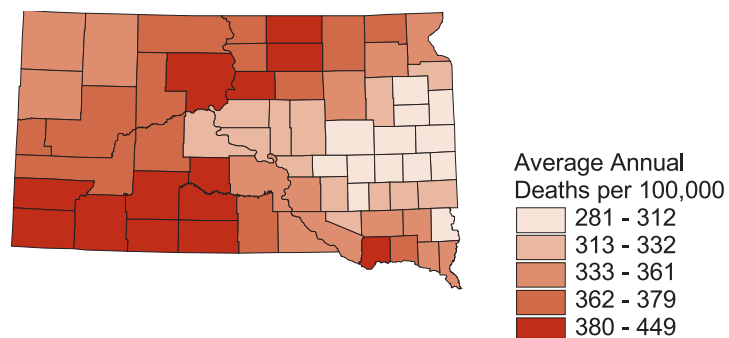


American Indian and Alaska Native Women

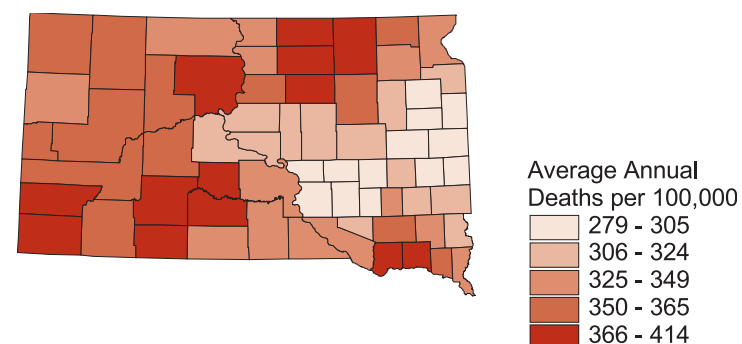


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

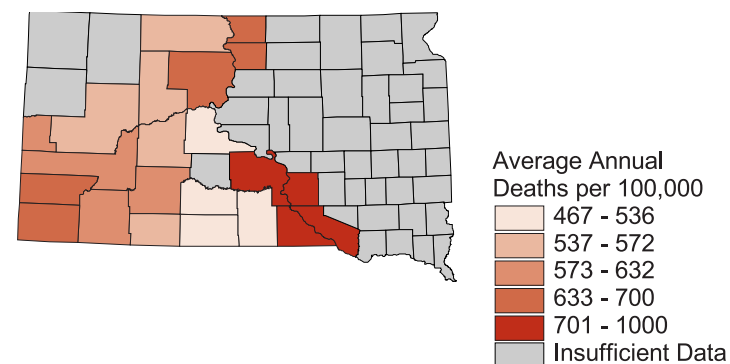


State Profile — South Dakota

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	185,333	344
American Indian and Alaska Native Women	7,682	577
Asian and Pacific Islander Women	803	Insufficient Data
Black Women	376	Insufficient Data
Hispanic Women	960	Insufficient Data
White Women	176,472	335

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

American Indian and Alaska Native Women

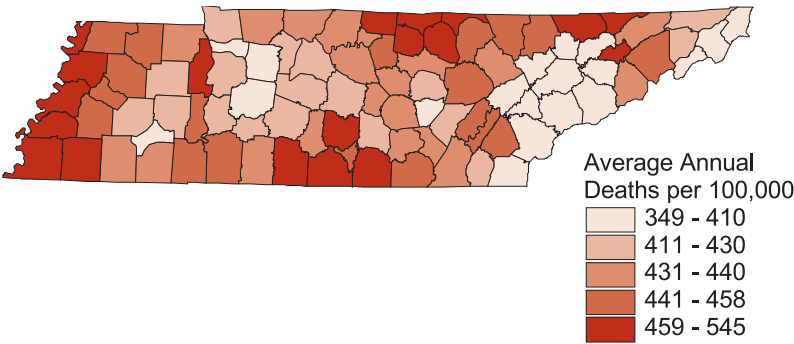


*Teaching local children to make cornballs
in Fort Berthold, North Dakota.*

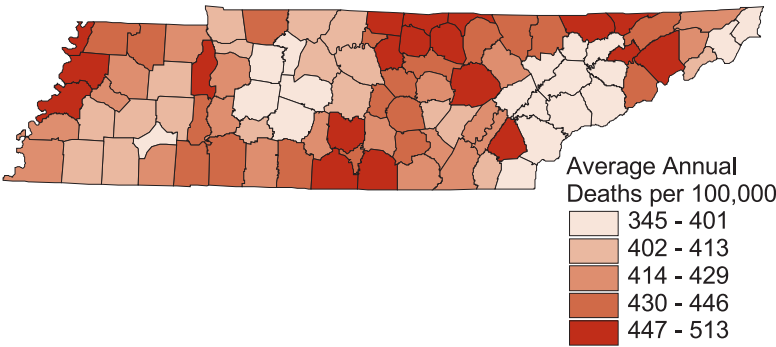


Greta Pratt, Impact Visuals

All Women



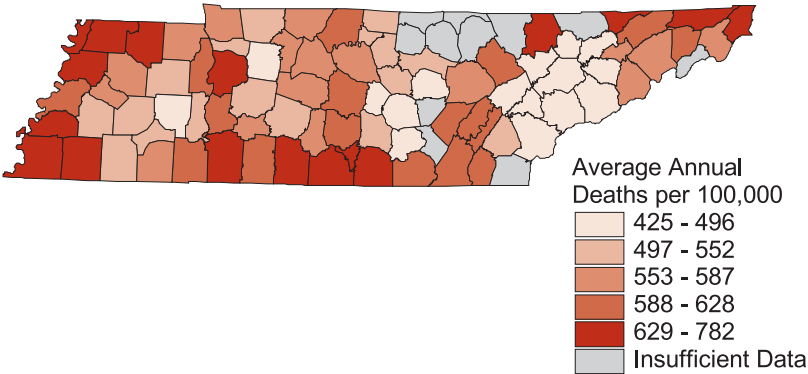
White Women



Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,409,344	435
American Indian and Alaska Native Women	2,703	Insufficient Data
Asian and Pacific Islander Women	9,418	259
Black Women	195,276	604
Hispanic Women	7,956	214
White Women	1,201,947	412

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

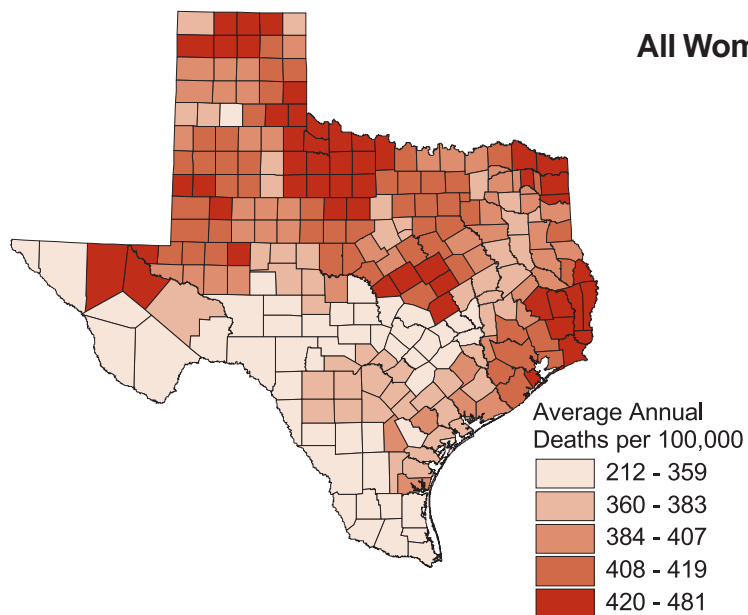




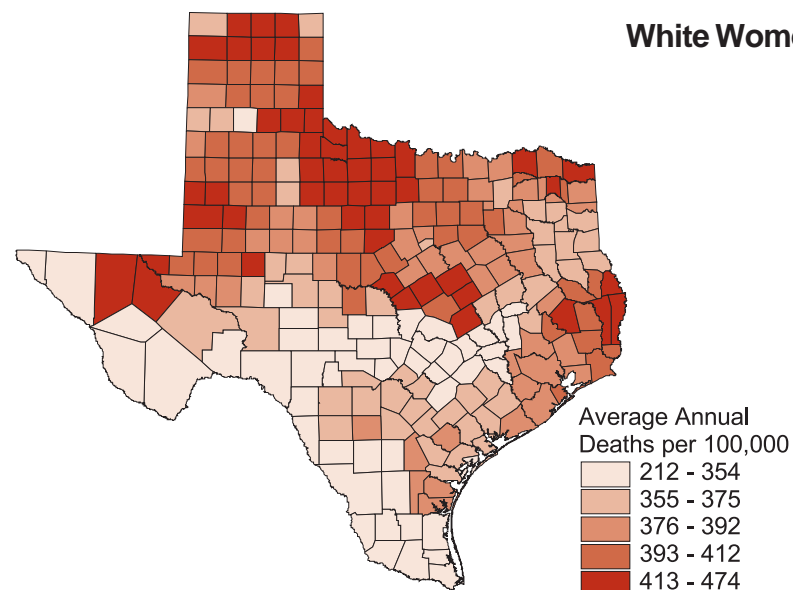
Navajo weaver.

©TSM/Pete Saloutos

All Women



White Women

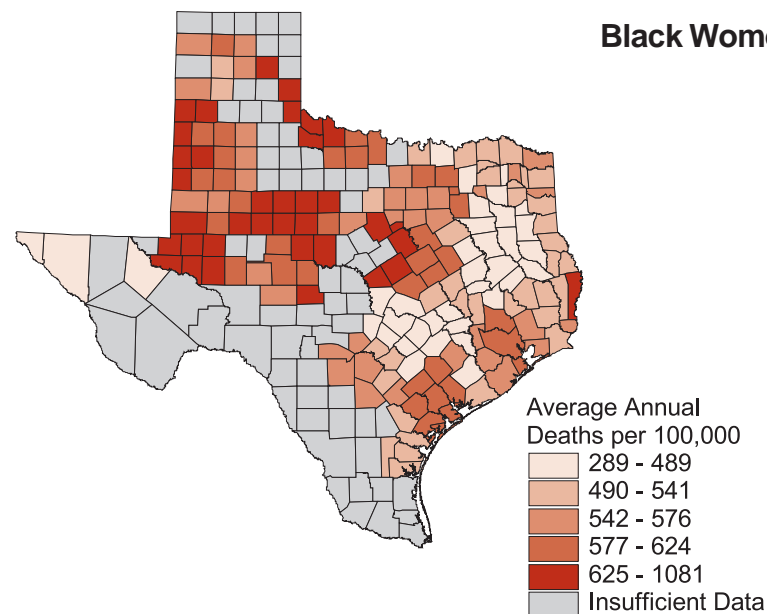


State Profile — Texas

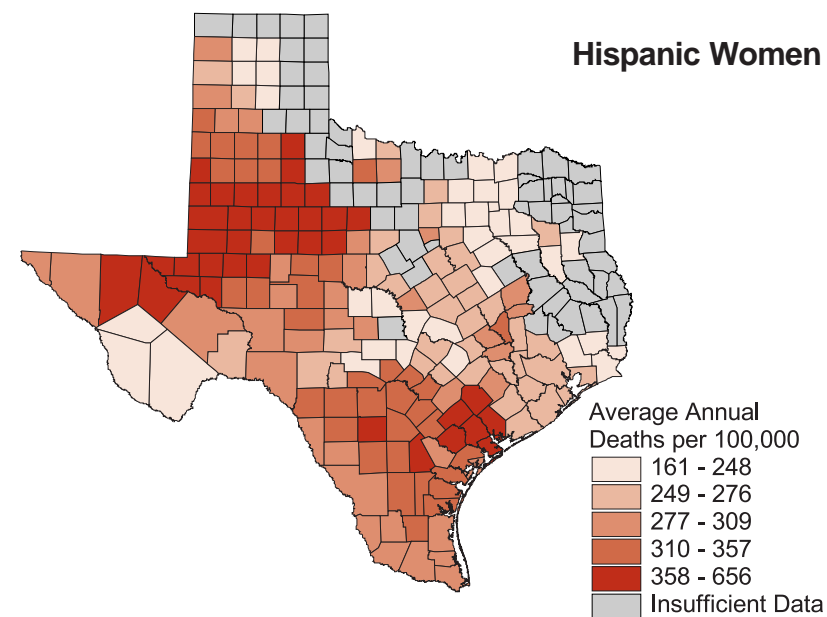
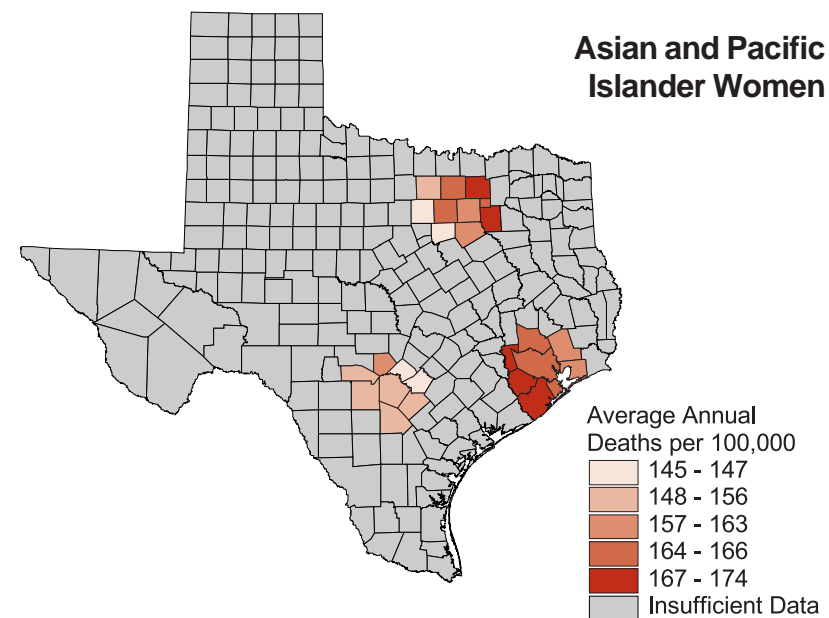
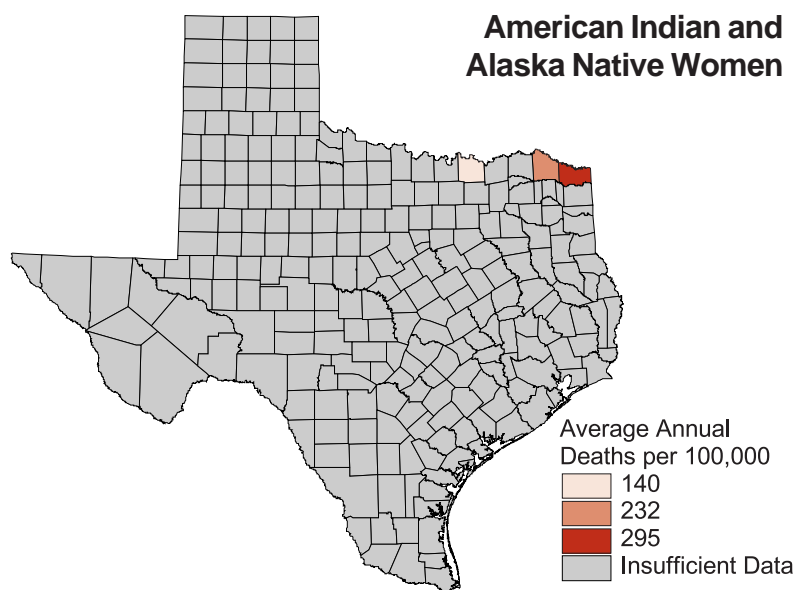
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	4,474,077	388
American Indian and Alaska Native Women	18,482	56
Asian and Pacific Islander Women	99,761	154
Black Women	490,439	540
Hispanic Women	919,319	296
White Women	3,865,395	374

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

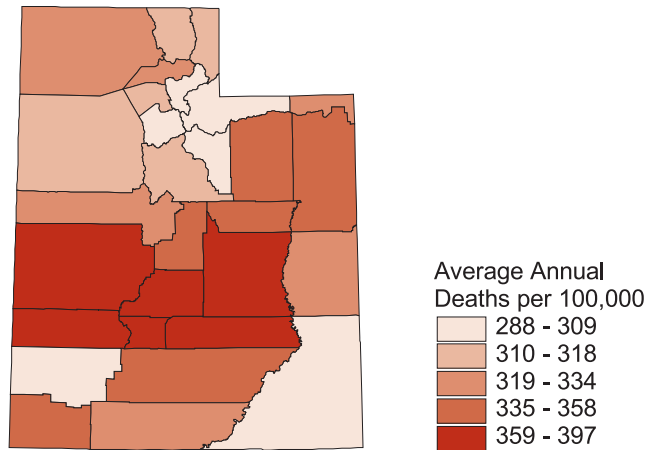


Smoothed County Heart Disease Death Rates, 1991-1995

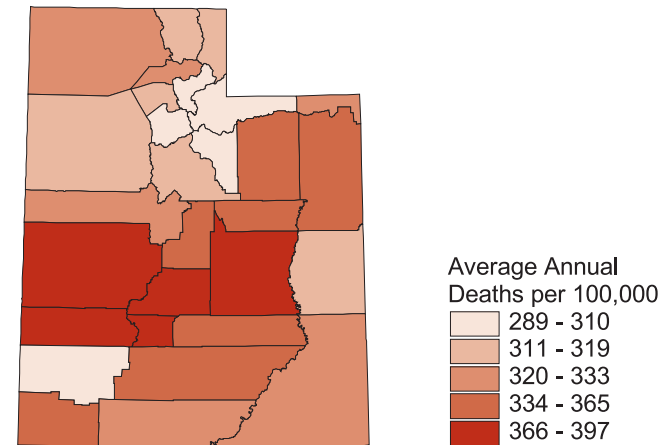


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

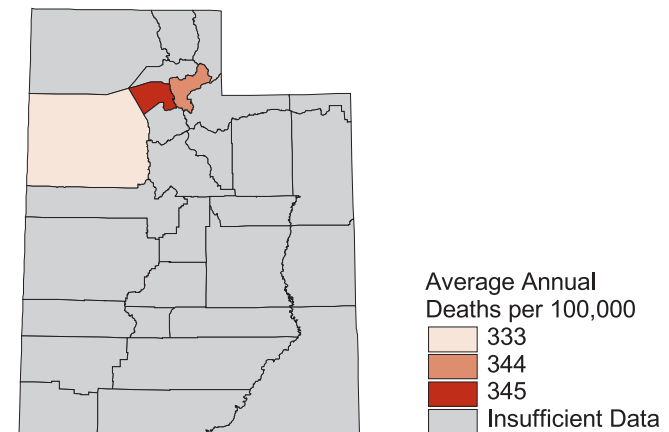


State Profile — Utah

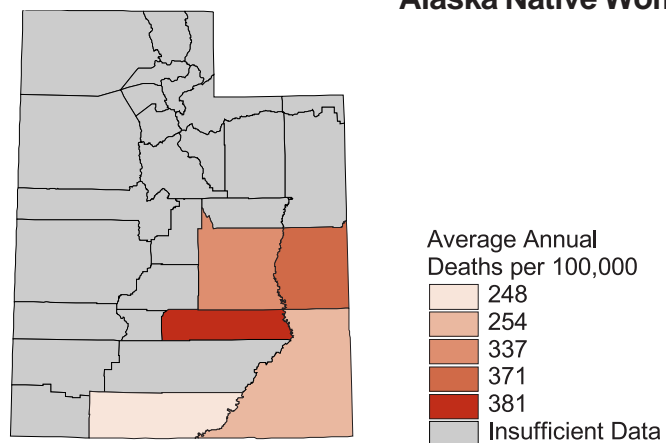
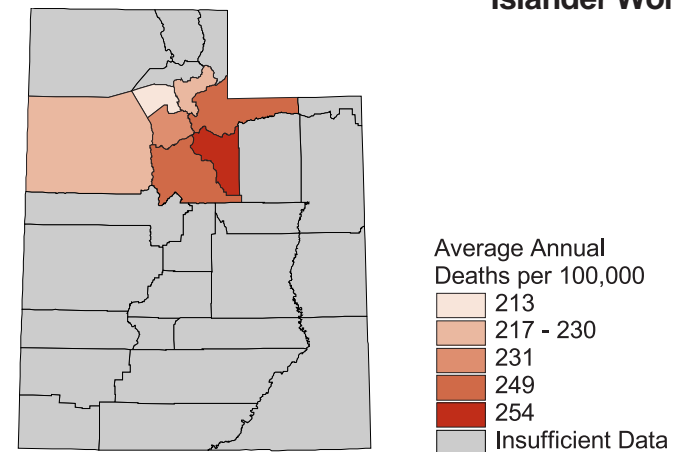
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	386,521	313
American Indian and Alaska Native Women	4,081	311
Asian and Pacific Islander Women	7,724	220
Black Women	2,094	324
Hispanic Women	16,112	210
White Women	372,622	314

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

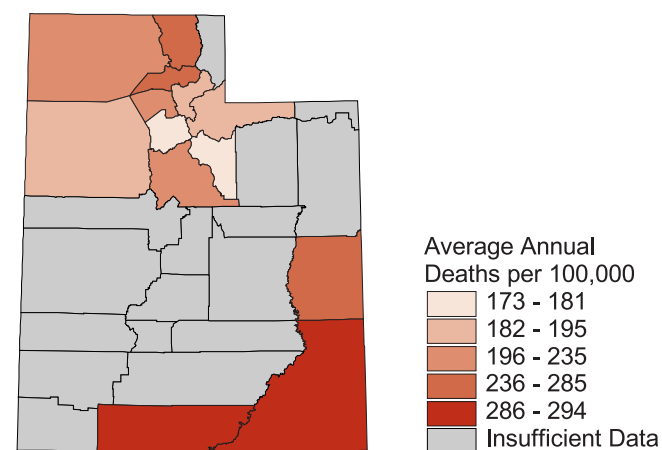
Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

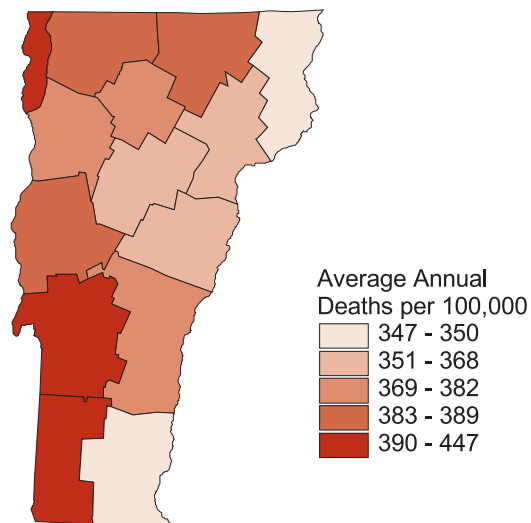
American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

Hispanic Women

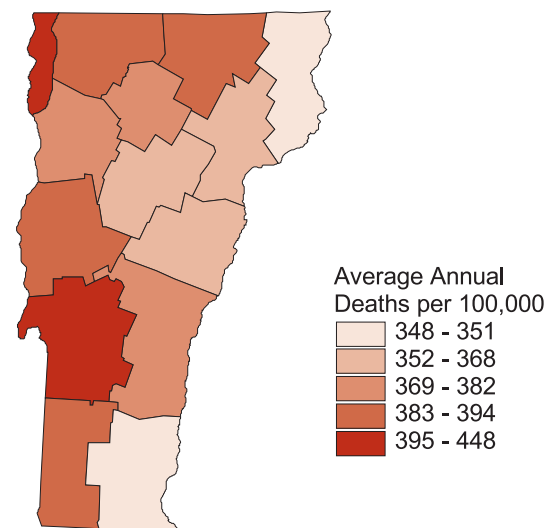


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women



State Profile — Vermont

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	154,251	374
American Indian and Alaska Native Women	284	Insufficient Data
Asian and Pacific Islander Women	732	Insufficient Data
Black Women	400	Insufficient Data
Hispanic Women	812	Insufficient Data
White Women	152,835	374

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.



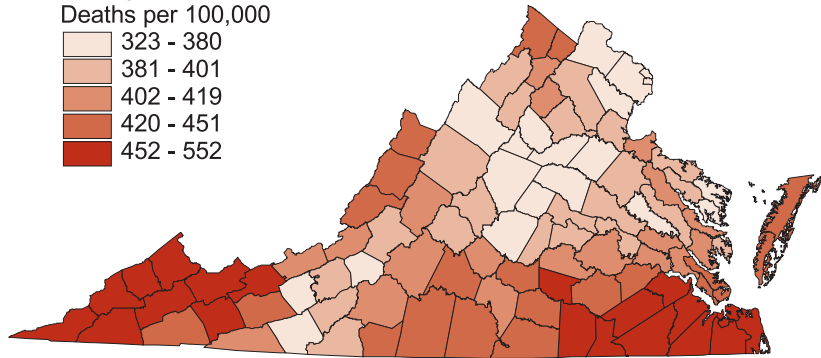
Senior aerobics class.

©TSM/Chuck Savage

All Women

Average Annual
Deaths per 100,000

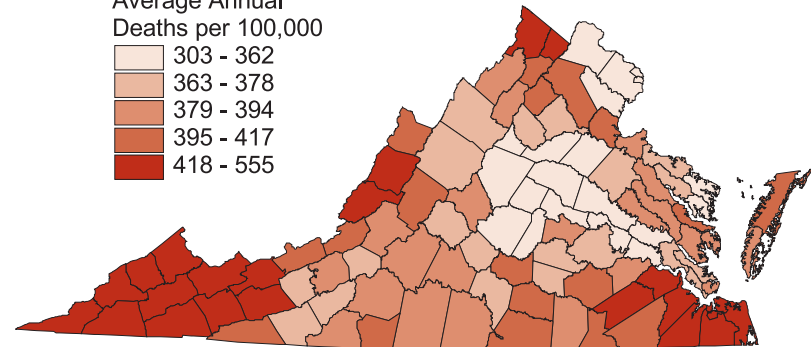
- 323 - 380
- 381 - 401
- 402 - 419
- 420 - 451
- 452 - 552



White Women

Average Annual
Deaths per 100,000

- 303 - 362
- 363 - 378
- 379 - 394
- 395 - 417
- 418 - 555



State Profile — Virginia

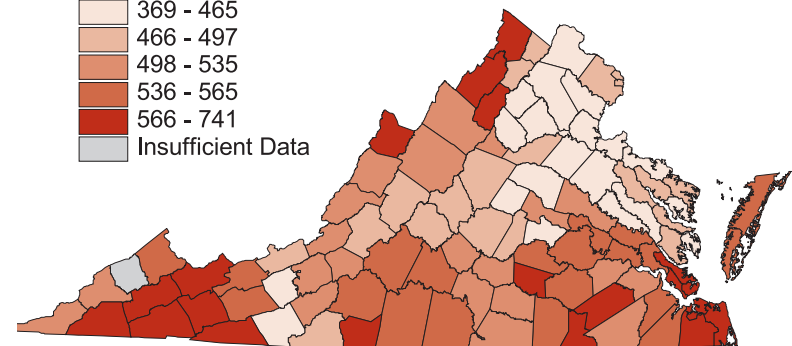
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,700,258	404
American Indian and Alaska Native Women	3,869	Insufficient Data
Asian and Pacific Islander Women	48,527	178
Black Women	299,522	539
Hispanic Women	35,958	184
White Women	1,348,340	380

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older.
Data for Hispanics are also included within each of the four categories of race.

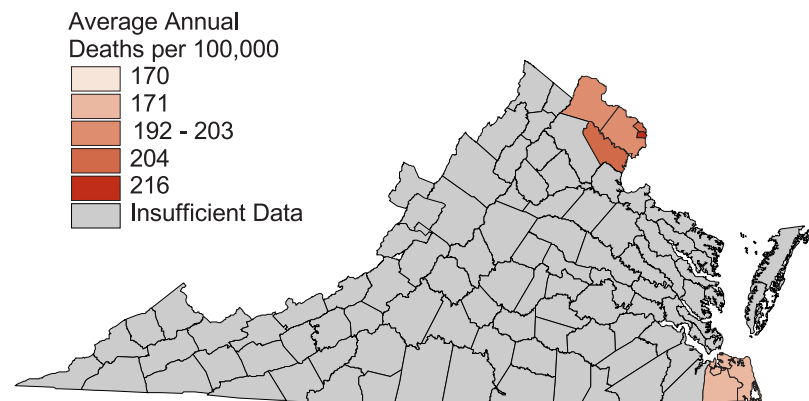
Black Women

Average Annual
Deaths per 100,000

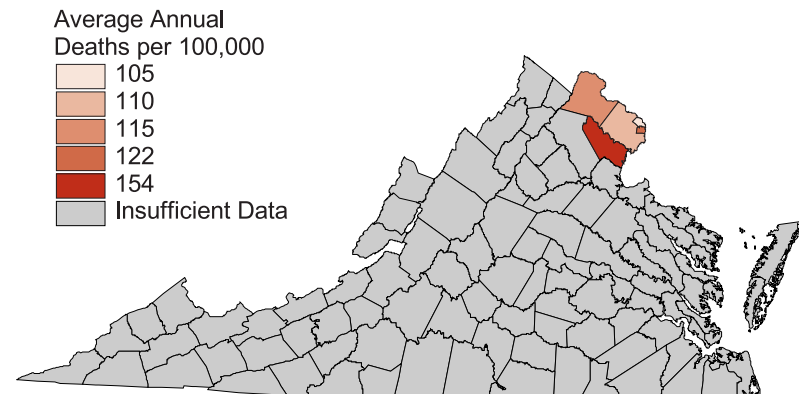
- 369 - 465
- 466 - 497
- 498 - 535
- 536 - 565
- 566 - 741
- Insufficient Data



Smoothed County Heart Disease Death Rates, 1991-1995

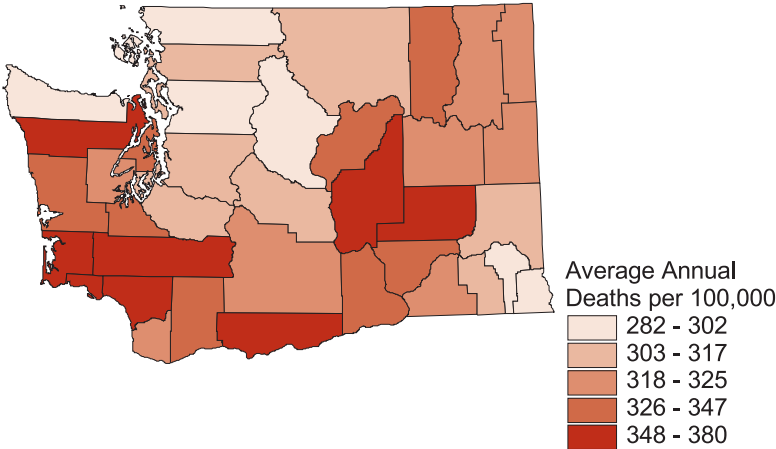
Asian and Pacific
Islander Women

Hispanic Women

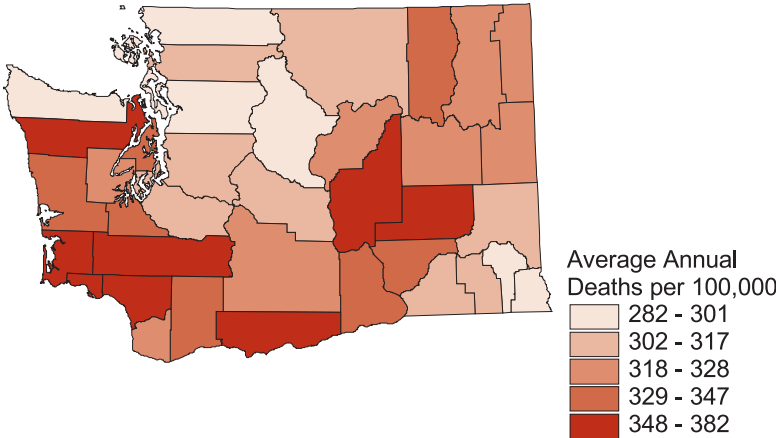


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

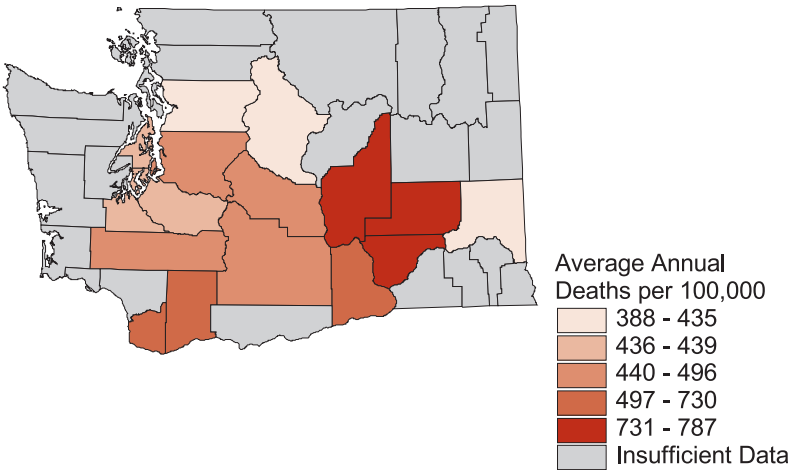


State Profile — Washington

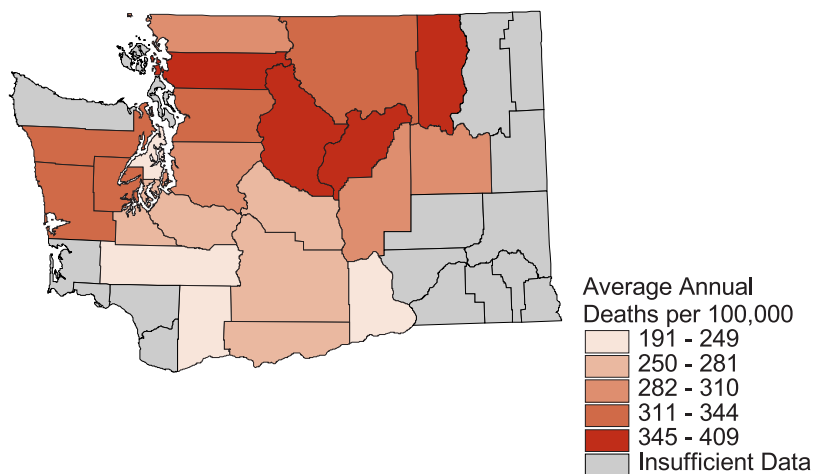
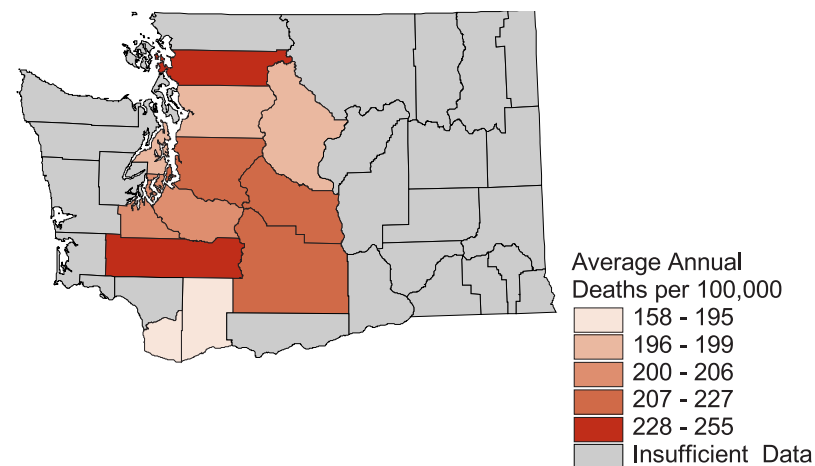
Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,386,393	319
American Indian and Alaska Native Women	18,663	283
Asian and Pacific Islander Women	65,208	204
Black Women	31,706	441
Hispanic Women	39,850	181
White Women	1,270,816	320

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

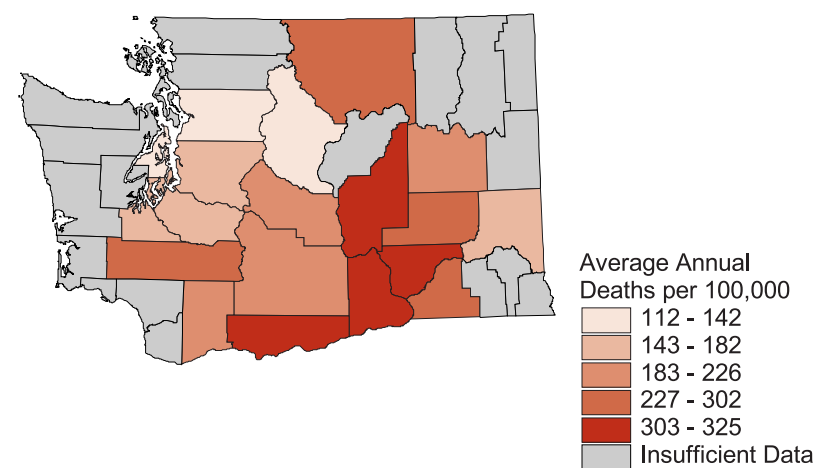
Black Women



Smoothed County Heart Disease Death Rates, 1991-1995

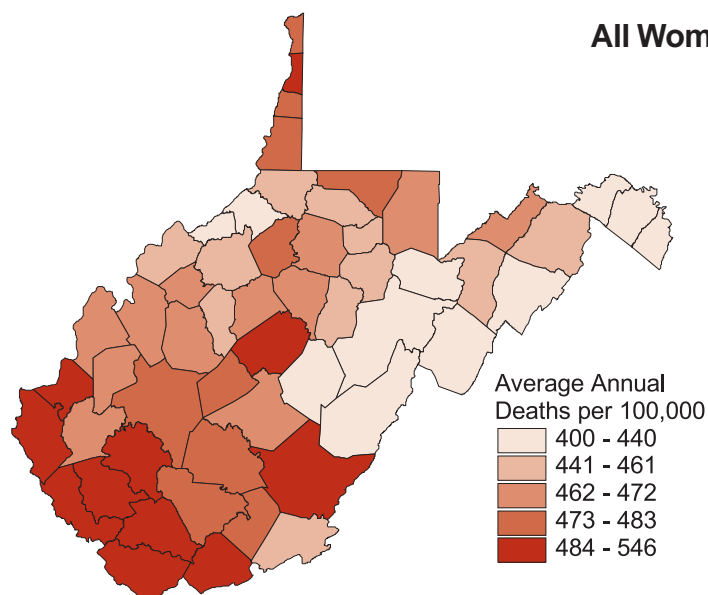
American Indian and
Alaska Native WomenAsian and Pacific
Islander Women

Hispanic Women

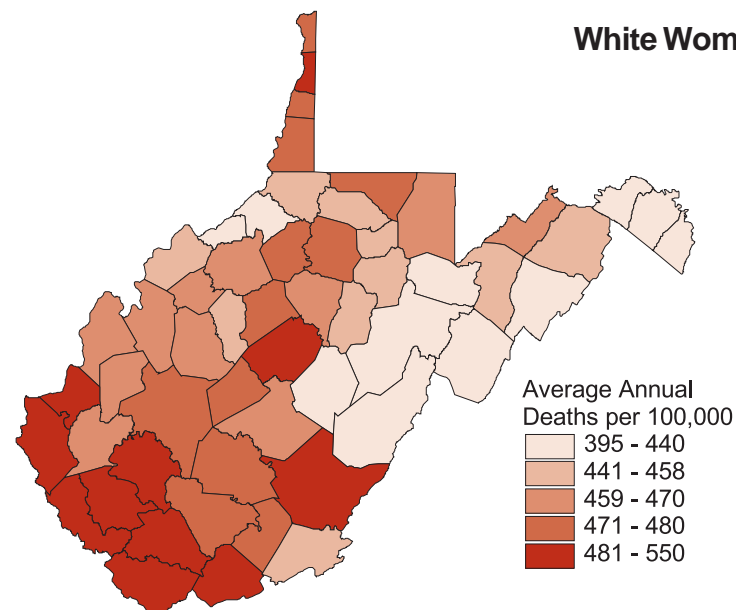


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

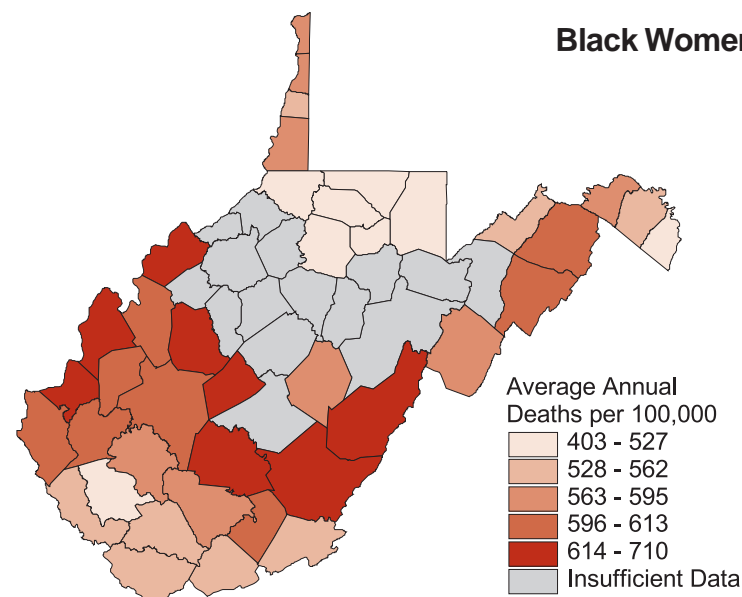


State Profile — West Virginia

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	523,354	472
American Indian and Alaska Native Women	707	Insufficient Data
Asian and Pacific Islander Women	2,035	Insufficient Data
Black Women	15,358	566
Hispanic Women	2,217	Insufficient Data
White Women	505,254	470

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Black Women

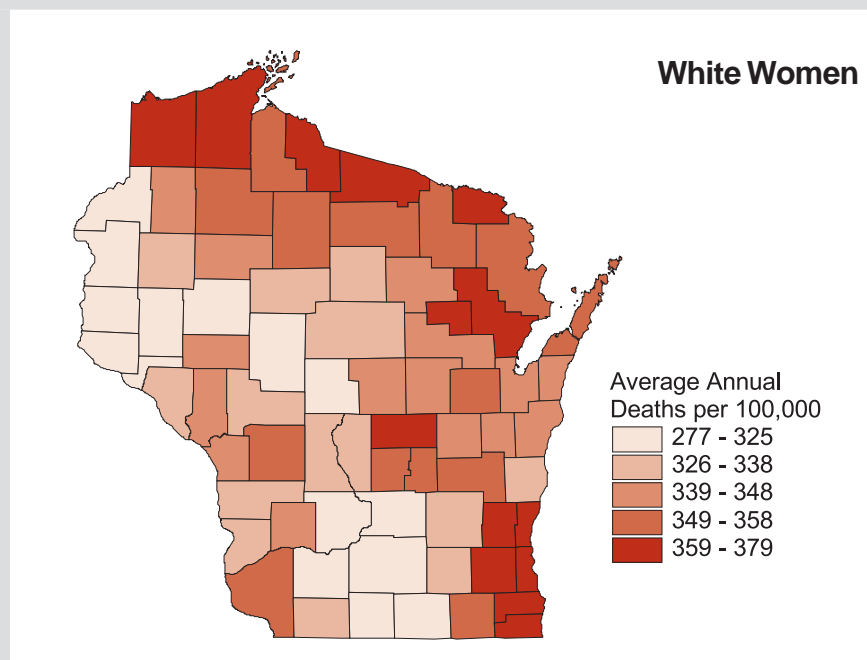
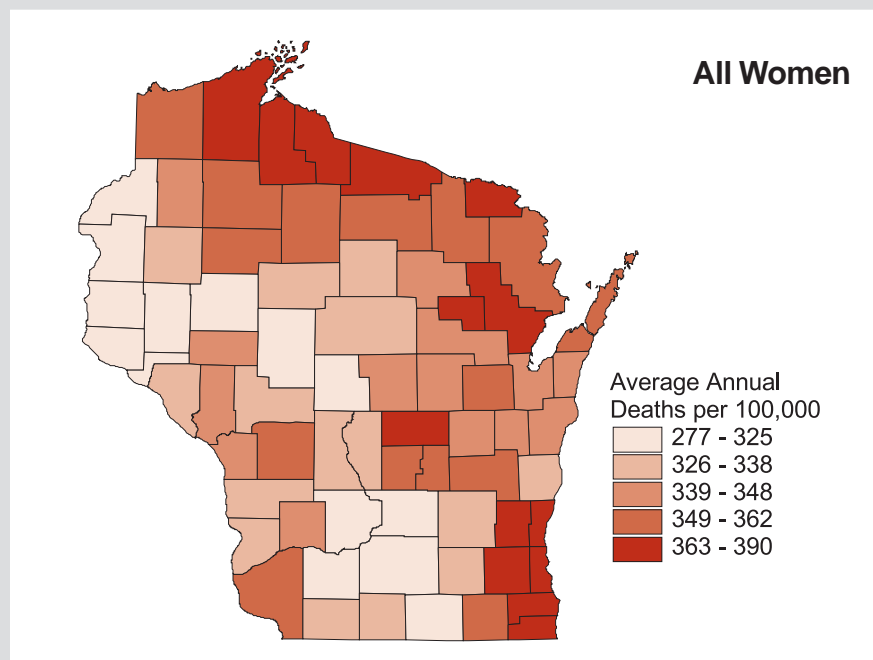




© Michael Newman/PhotoEdit/PNI

Looking at family photographs.

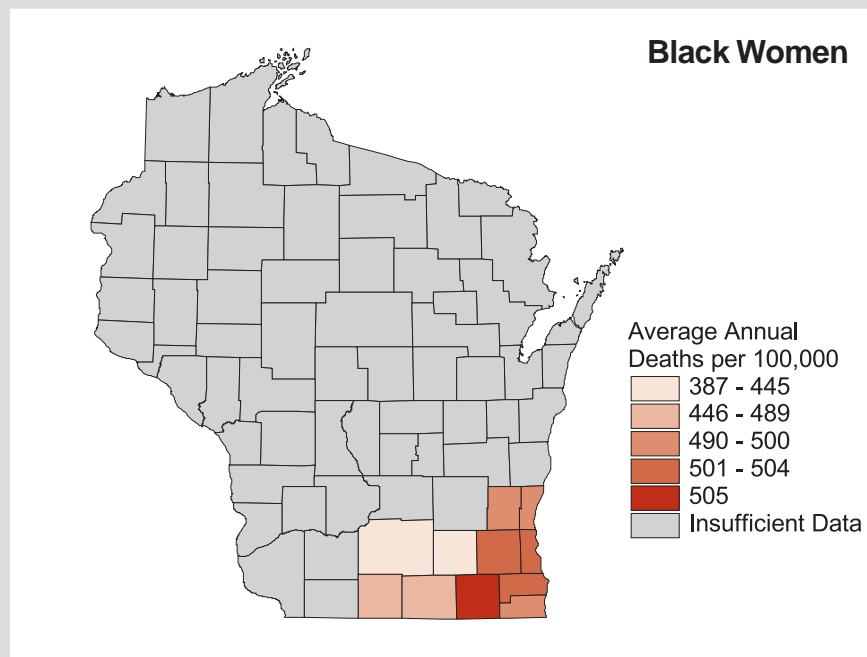
Smoothed County Heart Disease Death Rates, 1991-1995



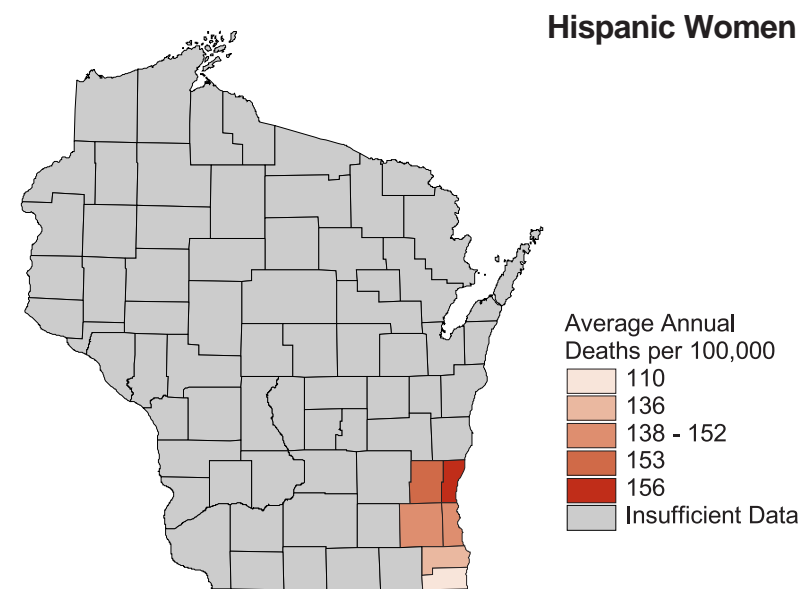
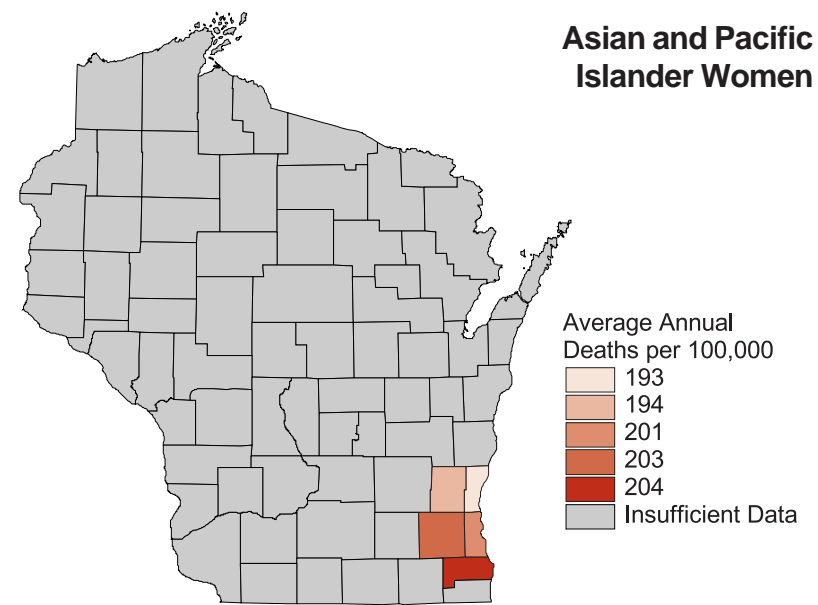
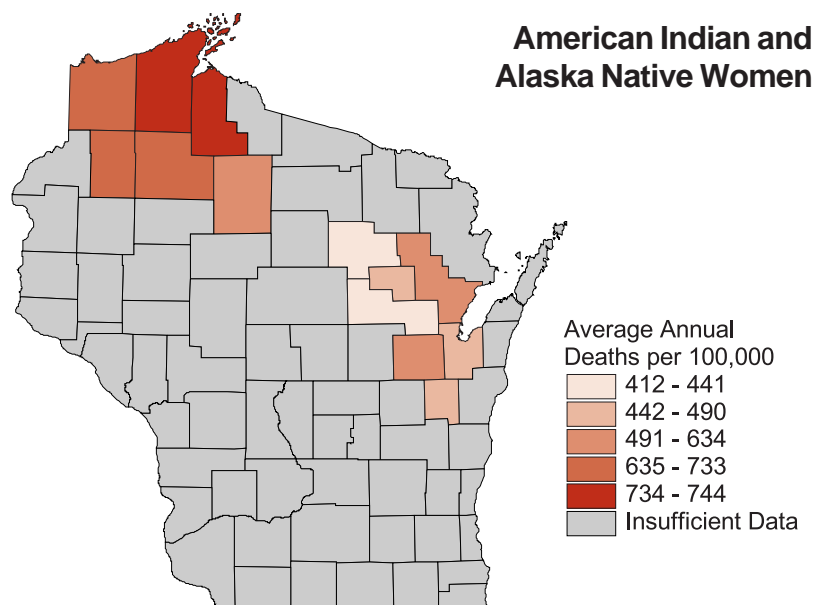
State Profile — Wisconsin

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	1,330,533	354
American Indian and Alaska Native Women	7,525	445
Asian and Pacific Islander Women	10,461	154
Black Women	49,917	491
Hispanic Women	16,695	117
White Women	1,262,630	350

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

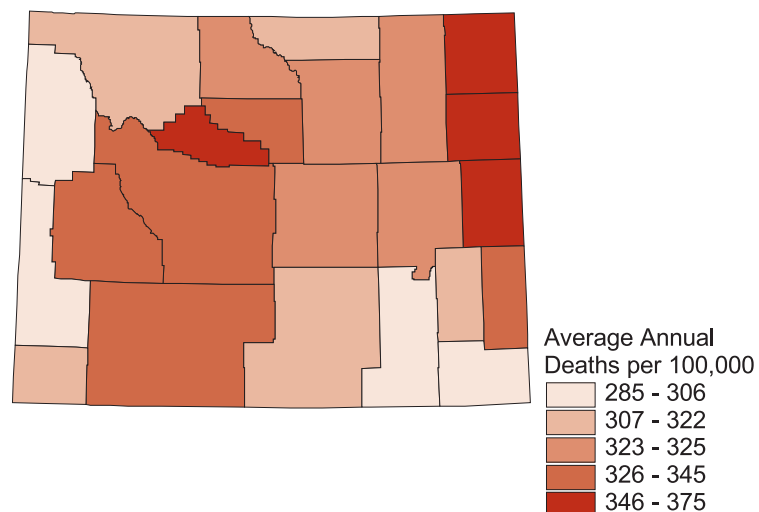


Smoothed County Heart Disease Death Rates, 1991-1995

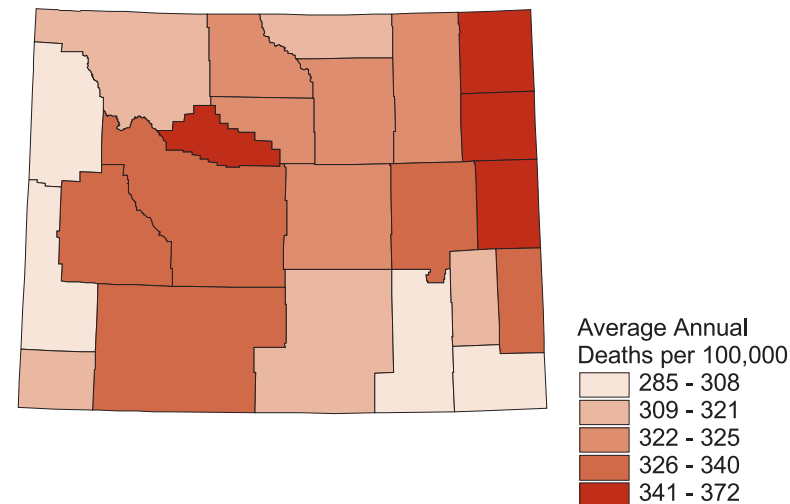


Smoothed County Heart Disease Death Rates, 1991-1995

All Women



White Women

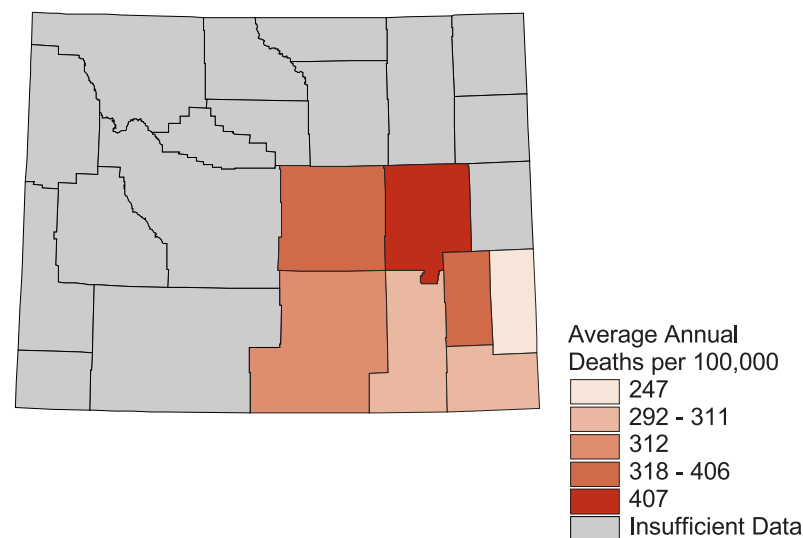


State Profile — Wyoming

Race or Ethnicity	State Population 1995	State Heart Disease Death Rate, 1991-1995*
All Women	118,822	322
American Indian and Alaska Native Women	1,784	Insufficient Data
Asian and Pacific Islander Women	758	Insufficient Data
Black Women	628	Insufficient Data
Hispanic Women	4,872	266
White Women	115,652	322

* Average annual age-adjusted rate (deaths per 100,000) for women ages 35 years and older. Data for Hispanics are also included within each of the four categories of race.

Hispanic Women



Pruning flowers.



©TSM/Ronnie Kaufman

A State Rankings
of Heart Disease
Mortality among
Women

State Ranking of Heart Disease Death Rates for All Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	33,033	1,136,130	445	47
Alaska	862	122,878	285	2
Arizona	22,259	1,087,171	339	13
Arkansas	20,381	667,464	413	32
California	169,912	7,455,185	373	25
Colorado	15,150	955,382	296	4
Connecticut	25,265	905,238	371	23
Delaware	4,908	187,157	431	37
Dist. of Columbia	4,577	153,763	444	46
Florida	114,975	4,079,724	353	16
Georgia	42,632	1,785,363	440	42
Hawaii	4,640	297,222	297	5
Idaho	5,614	279,469	323	12
Illinois	90,790	3,053,481	429	35
Indiana	43,542	1,519,445	422	34
Iowa	24,446	776,201	357	18
Kansas	19,652	664,026	361	21
Kentucky	29,501	1,023,219	441	44
Louisiana	30,728	1,086,374	469	48
Maine	9,179	340,181	366	22
Maryland	29,769	1,316,398	395	28
Massachusetts	45,082	1,650,271	349	15
Michigan	70,046	2,469,069	442	45
Minnesota	24,931	1,174,749	284	1
Mississippi	24,008	680,726	531	51
Missouri	47,181	1,427,553	430	36

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	4,482	230,331	292	3
Nebraska	13,048	428,121	360	19
Nevada	7,130	374,589	416	33
New Hampshire	7,127	296,286	360	19
New Jersey	60,934	2,189,302	407	31
New Mexico	7,237	412,053	315	9
New York	171,533	4,929,714	487	50
North Carolina	46,846	1,902,353	400	29
North Dakota	4,306	163,941	307	6
Ohio	89,015	2,987,355	437	40
Oklahoma	27,492	862,701	440	42
Oregon	17,635	848,184	307	6
Pennsylvania	112,999	3,435,632	433	38
Rhode Island	8,575	274,257	371	23
South Carolina	24,029	953,621	438	41
South Dakota	5,587	185,333	344	14
Tennessee	39,164	1,409,344	435	39
Texas	99,564	4,474,077	388	27
Utah	6,852	386,521	313	8
Vermont	3,964	154,251	374	26
Virginia	39,302	1,700,258	404	30
Washington	27,027	1,386,393	319	10
West Virginia	17,530	523,354	472	49
Wisconsin	35,603	1,330,533	354	17
Wyoming	2,222	118,822	322	11

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 51.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

State Ranking of Heart Disease Death Rates for American Indian and Alaska Native Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	17	3,557	***	***
Alaska	171	15,407	308	19
Arizona	427	40,739	286	18
Arkansas	18	2,948	***	***
California	379	63,648	161	6
Colorado	36	6,865	181	8
Connecticut	22	1,638	313	21
Delaware	12	527	***	***
Dist. Of Columbia	2	389	***	***
Florida	44	10,878	112	3
Georgia	8	3,568	***	***
Hawaii	15	1,161	***	***
Idaho	20	2,857	202	11
Illinois	22	5,544	114	4
Indiana	14	3,156	***	***
Iowa	7	1,439	***	***
Kansas	66	4,649	352	23
Kentucky	10	1,344	***	***
Louisiana	28	3,780	188	10
Maine	7	1,091	***	***
Maryland	17	3,258	***	***
Massachusetts	18	2,955	***	***
Michigan	238	11,749	617	32
Minnesota	137	8,901	472	27
Mississippi	23	1,728	337	22
Missouri	38	4,672	182	9

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	118	8,751	390	24
Nebraska	51	2,289	603	31
Nevada	51	5,567	277	14
New Hampshire	3	463	***	***
New Jersey	33	4,356	180	7
New Mexico	226	26,714	213	13
New York	137	15,646	212	12
North Carolina	344	18,118	485	28
North Dakota	77	4,264	525	29
Ohio	26	5,255	129	5
Oklahoma	831	53,204	278	16
Oregon	84	8,954	277	14
Pennsylvania	21	3,868	106	2
Rhode Island	24	930	442	25
South Carolina	17	1,693	***	***
South Dakota	178	7,682	577	30
Tennessee	14	2,703	***	***
Texas	37	18,482	56	1
Utah	40	4,081	311	20
Vermont	0	284	***	***
Virginia	13	3,869	***	***
Washington	167	18,663	283	17
West Virginia	4	707	***	***
Wisconsin	120	7,525	445	26
Wyoming	19	1,784	***	***

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 32.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

*** Insufficient data to calculate a heart disease death rate

State Ranking of Heart Disease Death Rates for Asian and Pacific Islander Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	17	5,945	***	***
Alaska	16	5,816	***	***
Arizona	85	18,275	241	30
Arkansas	19	3,351	***	***
California	6,189	826,450	221	27
Colorado	68	18,343	160	9
Connecticut	28	13,759	105	2
Delaware	5	2,954	***	***
Dist. Of Columbia	22	3,401	209	23
Florida	139	54,316	124	3
Georgia	84	24,878	197	19
Hawaii	3,227	199,714	293	34
Idaho	20	2,476	248	31
Illinois	389	81,436	179	14
Indiana	39	10,059	183	15
Iowa	24	5,252	272	33
Kansas	23	7,719	142	4
Kentucky	29	4,832	325	35
Louisiana	35	10,181	175	12
Maine	7	1,697	***	***
Maryland	189	42,134	201	20
Massachusetts	140	34,362	158	8
Michigan	119	26,332	201	20
Minnesota	39	15,363	99	1
Mississippi	18	3,434	***	***
Missouri	44	10,978	219	25

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	7	1,017	***	***
Nebraska	8	3,284	***	***
Nevada	70	15,808	222	28
New Hampshire	7	2,283	***	***
New Jersey	275	86,485	147	5
New Mexico	12	4,726	***	***
New York	1,298	198,243	236	29
North Carolina	47	16,052	174	11
North Dakota	2	868	***	***
Ohio	109	24,325	194	17
Oklahoma	41	8,588	216	24
Oregon	98	19,208	187	16
Pennsylvania	170	36,363	196	18
Rhode Island	15	3,563	***	***
South Carolina	20	6,518	167	10
South Dakota	4	803	***	***
Tennessee	40	9,418	259	32
Texas	288	99,761	154	6
Utah	44	7,724	220	26
Vermont	4	732	***	***
Virginia	182	48,527	178	13
Washington	380	65,208	204	22
West Virginia	3	2,035	***	***
Wisconsin	39	10,461	154	6
Wyoming	5	758	***	***

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 35.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

*** Insufficient data to calculate a heart disease death rate

State Ranking of Heart Disease Death Rates for Black Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	8,020	254,021	552	27
Alaska	31	3,580	439	7
Arizona	502	27,332	492	16
Arkansas	3,143	86,422	576	35
California	12,764	510,022	574	34
Colorado	436	31,765	383	5
Connecticut	1,232	63,799	484	13
Delaware	623	29,220	509	19
Dist. Of Columbia	3,381	103,777	514	21
Florida	9,873	434,876	532	22
Georgia	10,967	436,167	564	30
Hawaii	23	3,877	212	1
Idaho	12	765	***	***
Illinois	11,331	406,616	610	40
Indiana	2,936	106,443	571	32
Iowa	232	9,662	500	18
Kansas	754	30,301	477	11
Kentucky	1,920	64,758	533	24
Louisiana	8,947	301,133	595	38
Maine	11	645	***	***
Maryland	5,682	315,633	480	12
Massachusetts	1,053	71,810	367	4
Michigan	9,033	312,205	610	40
Minnesota	190	18,256	339	3
Mississippi	8,102	206,728	686	43
Missouri	4,087	134,854	585	37

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	5	380	***	***
Nebraska	334	12,241	618	42
Nevada	349	21,680	493	17
New Hampshire	9	1,256	***	***
New Jersey	5,551	265,616	490	14
New Mexico	133	7,878	408	6
New York	19,534	769,949	573	33
North Carolina	9,791	372,023	513	20
North Dakota	2	319	***	***
Ohio	8,090	294,545	556	28
Oklahoma	1,679	52,022	582	36
Oregon	194	10,036	463	10
Pennsylvania	8,045	283,564	532	22
Rhode Island	153	8,855	461	9
South Carolina	6,985	252,836	562	29
South Dakota	6	376	***	***
Tennessee	6,043	195,276	604	39
Texas	12,158	490,439	540	26
Utah	26	2,094	324	2
Vermont	7	400	***	***
Virginia	7,787	299,522	539	25
Washington	468	31,706	441	8
West Virginia	616	15,358	566	31
Wisconsin	796	49,917	491	15
Wyoming	5	628	***	***

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 43.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

*** Insufficient data to calculate a heart disease death rate

State Ranking of Heart Disease Death Rates for Hispanic Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	63	5,448	273	33
Alaska	3	3,331	***	***
Arizona	1,608	146,710	319	41
Arkansas	28	4,663	183	16
California	12,561	1,418,037	260	30
Colorado	953	95,016	260	30
Connecticut	267	41,544	197	21
Delaware	21	3,164	218	26
Dist. Of Columbia	23	7,079	94	3
Florida	7,554	477,796	276	34
Georgia	105	24,059	132	5
Hawaii	156	15,700	293	37
Idaho	48	9,365	195	19
Illinois	939	163,766	195	19
Indiana	152	20,837	209	22
Iowa	62	6,582	229	27
Kansas	120	17,191	192	18
Kentucky	54	4,546	315	40
Louisiana	194	24,002	159	13
Maine	5	1,394	***	***
Maryland	80	30,620	89	2
Massachusetts	240	52,023	149	9
Michigan	331	38,610	229	27
Minnesota	47	10,009	138	7
Mississippi	19	3,600	***	***
Missouri	138	13,194	248	29

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	14	2,545	***	***
Nebraska	44	8,058	151	11
Nevada	159	30,860	180	14
New Hampshire	10	2,311	***	***
New Jersey	1,291	178,286	210	23
New Mexico	1,717	134,004	282	36
New York	6,126	521,506	307	39
North Carolina	33	15,013	74	1
North Dakota	5	659	***	***
Ohio	167	29,027	157	12
Oklahoma	7	15,176	***	***
Oregon	82	21,680	142	8
Pennsylvania	454	46,254	278	35
Rhode Island	45	9,380	150	10
South Carolina	28	6,351	132	5
South Dakota	2	960	***	***
Tennessee	63	7,956	214	25
Texas	10,227	919,319	296	38
Utah	108	16,112	210	23
Vermont	6	812	***	***
Virginia	179	35,958	184	17
Washington	182	39,850	181	15
West Virginia	13	2,217	***	***
Wisconsin	57	16,695	117	4
Wyoming	49	4,872	266	32

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 41.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

*** Insufficient data to calculate a heart disease death rate

State Ranking of Heart Disease Death Rates for White Women

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Alabama	24,979	872,607	419	41
Alaska	644	98,075	285	3
Arizona	21,245	1,000,825	338	15
Arkansas	17,201	574,743	393	32
California	150,580	6,055,065	372	26
Colorado	14,610	898,409	296	5
Connecticut	23,983	826,042	364	23
Delaware	4,268	154,456	419	41
Dist. Of Columbia	1,172	46,196	279	1
Florida	104,919	3,579,654	339	16
Georgia	31,573	1,320,750	408	36
Hawaii	1,375	92,470	307	7
Idaho	5,562	273,371	324	13
Illinois	79,048	2,559,885	407	35
Indiana	40,553	1,399,787	413	38
Iowa	24,183	759,848	356	20
Kansas	18,809	621,357	357	21
Kentucky	27,542	952,285	436	47
Louisiana	21,718	771,280	428	46
Maine	9,154	336,748	367	24
Maryland	23,881	955,373	376	30
Massachusetts	43,871	1,541,144	349	17
Michigan	60,656	2,118,783	419	41
Minnesota	24,565	1,132,229	282	2
Mississippi	15,865	468,836	472	50
Missouri	43,012	1,277,049	417	39

State	Number of Deaths 1991-1995	Population 1995	Death Rate per 100,000 1991-1995*	State Ranking**
Montana	4,352	220,183	289	4
Nebraska	12,655	410,307	353	19
Nevada	6,660	331,534	417	39
New Hampshire	7,108	292,284	361	22
New Jersey	55,075	1,832,845	399	33
New Mexico	6,866	372,735	320	10
New York	150,564	3,945,876	477	51
North Carolina	36,664	1,496,160	375	29
North Dakota	4,225	158,490	303	6
Ohio	80,790	2,663,230	426	45
Oklahoma	24,941	748,887	442	48
Oregon	17,259	809,986	307	7
Pennsylvania	104,763	3,111,837	425	44
Rhode Island	8,383	260,909	370	25
South Carolina	17,007	692,574	399	33
South Dakota	5,399	176,472	335	14
Tennessee	33,067	1,201,947	412	37
Texas	87,081	3,865,395	374	27
Utah	6,742	372,622	314	9
Vermont	3,953	152,835	374	27
Virginia	31,320	1,348,340	380	31
Washington	26,012	1,270,816	320	10
West Virginia	16,907	505,254	470	49
Wisconsin	34,648	1,262,630	350	18
Wyoming	2,193	115,652	322	12

* Age-adjusted to the 1970 United States population

** The state with the lowest rate was ranked 1.

The state with the highest rate was ranked 51.

States that had identical rates were assigned the same rank.

New York City was not ranked separately.

*** Insufficient data to calculate a heart disease death rate

B Methodological
and Technical
Notes

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A. County Definitions

1. Overview

Data from several different sources were used in this publication, and one of our chief methodological concerns was ensuring comparability of county definitions across datasets. We used the Federal Information Processing Standard (FIPS) codes to link county definitions across datasets, and to reconcile differences. For the majority of states, there was 100% comparability in county definitions among all the datasets used. Details about modifications to county definitions for specific states appear below.

The following cities were retained as independent cities and the FIPS codes were modified to conform to the geographic database.

Independent City	Original FIPS Code	Modified FIPS Code	State
Baltimore City	24510	24007	Maryland
St. Louis City	29510	29191	Missouri
Carson City	32510	32025	Nevada
Suffolk City	51800	51123	Virginia

2. Alaska

In the Area Resource File (ARF), Alaska was treated as a single geographic unit. The ARF did not provide data for the Alaska county equivalents. Therefore, for each of the maps that present data from the ARF, we were unable to map data for Alaska. These maps include the following:

Total Population per Cardiovascular Disease (CVD) Physician, 1990
 Total Population per Cardiac Intensive Care Unit (CCU) Bed, 1993
 Cardiac Rehabilitation Units, 1993
 Local Economic Resources, 1990

Due to differences in county coding over time, and differential coding among the various data sources, several other changes were also made to county FIPS codes. The coding changes are indicated in the following tables. In 1994 the original Aleutian Islands (county code 2010) was subdivided into Aleutian Islands East (county code 2013) and Aleutian Islands West (county code 2016).

Original County	Original County FIPS Code	Incorporated into Adjacent County	Modified FIPS Code	State
Aleutian Islands East	2013	Aleutian Islands	2010	Alaska
Aleutian Islands West	2016	Aleutian Islands	2010	Alaska
Denali Borough	2068	Yukon-Koyukuk	2290	Alaska
Kobuk	2140	Yukon-Koyukuk	2290	Alaska
Skagway-Hoonah-Angoon	2232	Skagway-Yakutat-Angoon	2231	Alaska
Yakutat	2282	Skagway-Yakutat-Angoon	2231	Alaska

3. Arizona

Original County	Original County FIPS Code	Incorporated into Adjacent County	Modified FIPSCode	State
Yuma	4027	LaPaz	4012	Arizona

4. Hawaii

Original County	Original County FIPS Code	Incorporated into Adjacent County	Modified FIPS Code	State
Kalawao	15005	Maui	15009	Hawaii

5. Virginia

Virginia is comprised of counties and independent cities that are treated as county-equivalents in many datasets. However, not all of the datasets we used contained data for the Virginia independent cities. Many of these cities are also difficult to represent on a map because of their small land area. Therefore, the spatial geometry for most of Virginia independent cities was removed from the geographic database and data for those cities was collapsed into those counties with which they are most geographically associated. We followed the conventions of the 1996 Area Resource File. The changes made to FIPS codes to combine Virginia independent cities with their surrounding or adjacent counties are shown in the table below.

Independent City	Independent City FIPS Code	Incorporated into Adjacent County	Modified FIPSCode	State
Bedford	51515	Bedford	51019	Virginia
Bristol	51520	Washington	51191	Virginia
Buena Vista	51530	Rockbridge	51163	Virginia
Charlottesville	51540	Albemarle	51003	Virginia
Clifton Forge	51560	Allegheny	51005	Virginia
Colonial Heights	51570	Chesterfield	51041	Virginia
Covington	51580	Allegheny	51005	Virginia
Danville	51590	Pittsylvania	51143	Virginia
Emporia	51595	Greensville	51081	Virginia
Fairfax	51600	Fairfax	51059	Virginia
Falls Church	51610	Fairfax	51059	Virginia
Franklin	51620	South Hampton	51175	Virginia
Fredericksburg	51630	Spotaylvania	51177	Virginia
Galax	51640	Grayson	51077	Virginia
Harrisonburg	51660	Rockingham	51165	Virginia
Hopewell	51670	Prince George	51149	Virginia
Lexington	51678	Rockbridge	51163	Virginia
Lynchburg	51680	Campbell	51031	Virginia
Manassas	51683	Prince William	51153	Virginia

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Independent City	Independent City FIPS Code	Incorporated into Adjacent County	Modified FIPS Code	State
Manassas Park	51685	Prince William	51153	Virginia
Martinsville	51690	Henry	51089	Virginia
Norfolk	51710	Norfolk	51129	Virginia
Norton	51720	Wise	51195	Virginia
Petersburg	51730	Dinwiddie	51053	Virginia
Portsmouth	51740	Norfolk	51129	Virginia
Radford	51750	Montgomery	51121	Virginia
Richmond	51760	Henrico	51087	Virginia
Roanoke	51770	Roanoke	51161	Virginia
Salem	51775	Roanoke	51161	Virginia
South Boston	51780	Halifax	51083	Virginia
Staunton	51790	Augusta	51015	Virginia
Waynesboro	51820	Augusta	51015	Virginia
Williamsburg	51830	James City	51095	Virginia
Winchester	51840	Frederick	51069	Virginia

5. Yellowstone National Park

Original County	Original County FIPS Code	Incorporated into Adjacent County	Modified FIPS Code	State
Yellowstone National Park (Part)	30113	Park	30067	Montana

B. Data Sources

1. Economic Resources Data

Data for the Index of Local Economic Resources were obtained from the Area Resource File (February 1996 edition) — a compilation of health-related data that have been abstracted from multiple data sources by the Bureau of Health Professions, Department of Health and Human Services. The three variables that were used to create the index were abstracted from the 1990 Census of Population and Housing, STF3A data files. The Index of Economic Resources was based on three dimensions of the local socioeconomic infrastructure: *median family income*, *occupational structure*, and *unemployment rate*. Occupational structure was defined as the percent of all employed persons who were engaged in white collar jobs (i.e. managerial and professional specialty occupations and technical, sales, and administrative support jobs).

The index was calculated by ranking all counties separately for each variable. For each variable, the counties were then categorized into deciles, and each decile was assigned a score ranging from 0 to 9. Counties in the decile with the poorest economic conditions (lowest median income, lowest occupational structure, highest unemployment rate) were assigned a 0 and

counties in the decile with the most advantaged economic conditions were assigned a 9. For each county, the scores from the three variables were added together to arrive at the index score. The range of the score is from 0 (counties that were in the lowest decile for all three dimensions of the Index) to 27 (counties that were in the top decile for all three dimensions of the Index). The distribution of index values across all counties was then divided into five groups with roughly equal ranges of index values.

2. Heart Disease Mortality Data

Death certificate data for the years 1991-1995 were obtained through the National Vital Statistics System maintained by the National Center for Health Statistics. Deaths from heart disease were defined as those for which the underlying cause of death listed on the death certificate was coded according to the International Classification of Diseases - 9th Revision (ICD-9) as: 390-398, 402, 404-429. These codes comprise the category 'Diseases of the Heart' as defined by the National Center for Health Statistics.¹ For each decedent, underlying cause of death, age, race/ethnicity, gender, and county of residence at the time of death were abstracted from computerized death certificate files. Information on Hispanic ethnicity was not collected on death certificates in Oklahoma throughout the 1991-1995 study period, and prior to 1993 was not collected for New Hampshire. Consequently, we could not analyze decedents of Hispanic ethnicity for Oklahoma and New Hampshire.

3. Medical Care Resources Data

Data on medical care resources were obtained from the Area Resource File, (February 1996 edition) a compilation of health-related data abstracted from multiple data sources by the Bureau of Health Professions, Department of Health and Human Services. Maps were created for the following indicators of medical care resources relevant to secondary prevention of heart disease mortality: *population per cardiovascular disease specialty physician*, *population per coronary care unit bed*, and *number of cardiac rehabilitation units*. The primary source for the data on cardiovascular disease physicians was the American Medical Association Physician Master File. The primary source for the data on coronary care unit beds and cardiac rehabilitation units was the County Hospital File for 1993.

Rather than map the number of physicians per county, we chose to map the ratio of county population size to each cardiovascular specialty physician. This approach provides a better comparative measure of the availability of physicians when examining counties with large populations vs. counties with small populations. Similarly, we chose to map the ratio of county population size to each coronary care unit bed. Because cardiac rehabilitation units are intended to serve more than one individual at a time, we mapped the total number of cardiac rehabilitation units in each county.

4. Population Data

Population count data for all counties in the U.S. were obtained from the Bureau of the Census for the years 1991-1995. These intercensal estimates were calculated by the Bureau of the Census through extrapolation of linear trends in population growth and inter-county migration patterns between census years 1980 and 1990.

5. Social Isolation of Women Data

Data on several dimensions of women’s social isolation were obtained from the 1990 Special Tabulation on Aging compiled by the Bureau of the Census. This dataset contains a variety of variables, abstracted from the 1990 Census of Population and Housing, for elderly women and men. We examined data for women aged 60 years and older. The majority of heart disease deaths for women aged 35 years and older actually occur to women aged 60 years and older, because of the strong association between increasing age and heart disease risk.

Two indicators of women’s social isolation were mapped for this atlas: percent of women living alone, and the percent of women with either mobility or self-care limitations. *Living alone* was defined as an individual living in a household without a spouse or other family members or friends. A *mobility limitation* was defined as a health condition, either physical or mental that lasted for 6 or more months, which made it difficult to go outside the home alone. A *self-care limitation* was defined as a health condition, either physical or mental that lasted for 6 or more months, which made it difficult to take care of personal needs, such as dressing, bathing, or getting around inside the home.

To produce the maps of women’s social isolation, we first excluded 32 counties with fewer than 100 women over the age of 60 years old in 1990. For each of the two measures of women’s social isolation, the range between the 1st and 99th percentiles of the distribution of the percentage values was divided into 5 equal categories. Counties below the first and above the 99th percentiles of the distribution were included in the lowest and highest categories respectively. These five categories provided the cutpoints for mapping.

C. Map Projections

1. National Maps

To facilitate the presentation of information for all U.S. counties, several different map projections were used. For the coterminous United States an Albers-Conic Equal Area projection was used. Alaska was projected to the Miller Cylindrical projection and Hawaii is presented using geographic coordinates (latitude and longitude). Neither Alaska nor Hawaii is to proper geographic scale relative to the continental United States. The combinations of projections and scales allowed the presentation of a relatively familiar orientation of these geographic features.

The coordinate information for the contiguous United States was projected using the Albers Equal-Area projection with the following parameters:

Spheroid: Clarke 1866	1 st Standard Parallel: 29.500	False Easting: 0.000
Central Meridian: -96.000	2 nd Standard Parallel: 45.500	False Northing: 0.000
Reference Latitude: 37.500		

The coordinate information for Alaska has been projected using the Miller Cylindrical project with the following parameters:

Spheroid: Sphere	Central Meridian: 0.000
------------------	-------------------------

2. State Maps

All state maps were projected using the State-Plane coordinate systems of each state. The state maps are presented to maximize the reader's ability to interpret results for each state and are therefore not to proper geographic scale relative to one another. However, State-Plane coordinate systems are commonly used by state agencies and therefore their use here maximizes the reader's ability to compare these maps with other information.

Many states did not have significant populations of women of particular racial and ethnic groups. In many cases racial and ethnic specific rates could not be calculated for any of the counties within the state. Rather than present blank maps for these states, we elected only to generate race and ethnicity-specific state maps if there were at least two counties with heart disease mortality rates for any given racial and ethnic group.

D. Race and Ethnicity Definitions

The race and ethnicity categories used in *Women and Heart Disease* were defined according to Office of Management and Budget, Directive 15,² and are not based upon biological or anthropological concepts. The categories were developed in response to needs for collecting standardized data to be used by federal agencies for record keeping, collection and presentation of data (i.e., Federal surveys, the decennial census and monitoring various civil rights laws).

According to the Office of Management and Budget, the federal agency that defines standards for government publications, there are six minimum categories for race and ethnicity classification (listed below). Hispanic or Latino is considered a designation of ethnicity, not race, and people of Hispanic or Latino origin may be of any race.

- ♦ ***American Indian or Alaska Native.*** A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
- ♦ ***Asian or Pacific Islander.*** A person having origins in: a) any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam or b) a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- ♦ ***Black or African American.*** A person having origins in any of the black racial groups of Africa.
- ♦ ***Hispanic or Latino.*** A person of Cuban, Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.
- ♦ ***Native Hawaiian or Other Pacific Islander.*** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- ♦ ***White.*** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

E. Spatial Geometry

The geographic database, which includes spatial geometry and attribute information for all U.S. counties, was obtained from Environmental Systems Research Institute's (ESRI) ArcUSA database. ESRI has modified source data from the 1973 Digital Line Graph (DLG) data produced by the U.S. Geological Survey to improve the currency of the county boundary information to 1988. The geographic scale of the spatial geometry (linework) is 1:2,000,000, and is sufficient to identify major county features. Mortality, population, socioeconomic, and medical resource data were linked to county geography using the Federal Information Processing Standards (FIPS) codes.

F. Spatial Smoothing of Heart Disease Mortality Rates

1. Spatial Smoothing Methods

Heart disease death rates were calculated for women 35 years and older for the period 1991-1995. Separate rates were calculated for the following population groups: all women, American Indian and Alaska Native women, Asian and Pacific Islander women, black women, Hispanic women, and white women. For each population group, a smoothed death rate for heart disease, based on a spatial moving average, was calculated for each county.

For each county, heart disease deaths (numerators) and population counts (denominators) for ten-year age groups (e.g. 35-44 years old, 45-54 years old, etc.) were summed for the five-year study period 1991-1995. County numerators and denominators were then summed together with death count numerators and population count denominators of all neighboring counties, and then divided by the number of neighbors plus one to produce an average rate. "Neighbors" were defined based solely on contiguity (as opposed to distance). This process produced spatially smoothed age-specific (by 10-year age group) heart disease death rates. The spatially smoothed age-specific heart disease death rates were then directly age-adjusted to the 1970 United States population, for the age range 35 years and older.

Two constraints were applied to the calculation of county-level heart disease death rates for each race and ethnicity group. For a particular population group (e.g. Latina women aged 35 years and older), a heart disease death rate was *not* calculated for any county for which the total number of deaths in that county plus its neighbors was fewer than 20 during 1991-1995. To avoid calculating rates for counties that had no population themselves but whose neighbors had significant populations, rates were calculated only for counties that had a population count of 5 or greater for 1991-1995 (i.e. had 5 or greater person-years).

Information on Hispanic ethnicity was not collected on death certificates in Oklahoma throughout the 1991-1995 study period, and prior to 1993 was not collected for New Hampshire. Consequently, we removed all counties in Oklahoma and New Hampshire from the contiguity matrix when the rates for Latinas were spatially smoothed, and no rates for Hispanics in Oklahoma and New Hampshire were calculated.

2. Standard Population Weights

Age-specific heart disease death rates were directly age-adjusted using the 1970 U.S. population as the standard. The 1970 standard weights were based on the total resident population in the United States as of April 1, 1970.

Because we generated heart disease death rates only for men ages 35 and over, and weights used in the age-adjustment of mortality rates are required to sum to 1, the weights for 10-year age groups for ages 35 and over were recalculated from the 1970 standard weights. The 1970 standard weights were summed for age groups 35-44 through ages 85+. New weights for each of these age groups were calculated by dividing the original weight by the sum of the weights for ages 35 and older (i.e. .418101). The new weights were rounded to two decimal places for subsequent calculation of age-adjusted heart disease death rates.

2. Standard Population Weights

During 1991-1993, information on Hispanic origin was not reported on approximately 22% of heart disease death certificates for women aged 35 years and older residing in New York City. During 1994-1995, the percent of death certificates for women that were missing information on Hispanic origin dropped to less than 3%. Based on a detailed examination of the New York City death certificate data for our five-year study period, we concluded that the majority of the deaths with “unknown” Hispanic origin occurred among non-Hispanic women. As evident in the table below, the percent of heart disease deaths for Hispanic women rose only slightly between 1991-1993 and 1994-1995, while the percent of heart disease deaths for non-Hispanic women rose markedly after reporting improved in 1994. From 1991-1993 to 1994-1995, the average annual number of heart disease deaths increased 7% for Hispanic women and 22% for non-Hispanic women, while the number of deaths with unknown Hispanic origin declined 96%.

However, since a small proportion of the deaths with missing Hispanic origin data did occur among Hispanic women, it is almost certain that the heart disease death rates reported here for Hispanic women are modestly (but not severely) underestimated. In addition, the extent of underestimation may have varied among the five city boroughs; therefore prudence should be exercised in comparing individual county rates.

Percent Distribution of Heart Disease Deaths by Hispanic Origin for Women in New York City, 1991-1995					
Hispanic Origin	1991	1992	1993	1994	1995
Non-Hispanic	74.0	71.0	70.3	89.6	90.4
Hispanic	6.7	6.7	6.3	7.2	7.4
Unknown	19.3	22.3	23.5	3.3	2.2

3. Contiguity Matrix for Alaska

A contiguity matrix for all U.S. counties was obtained from the 1996 Area Resource File (ARF). The matrix identifies a maximum of fourteen contiguous neighbors for every U.S. county. Because Alaska was treated as a single geographic unit in the ARF, we created our own contiguity matrix for Alaska (shown below). Columns n1-n9 identify contiguous neighbors to each county.

1970 U.S. Population Standard Weights

Age-group	Weight
0-1	.017151
1-4	.067265
5-14	.200508
15-24	.174406
25-34	.122569
35-44	.113614
45-54	.114265
55-64	.091480
65-74	.061195
75-84	.030112
85+	.007435

1970 U.S. Population Standard Weights
Age groups 35 and older

Age group	Weight
35-44	.27
45-54	.27
55-64	.22
65-74	.15
75-84	.07
85+	.02

County	n1	n2	n3	n4	n5	n6	n7	n8	n9
2010	2164	0	0	0	0	0	0	0	0
2020	2170	2261	2122	0	0	0	0	0	0
2050	2070	2270	2170	2164	2290	2122	0	0	0
2060	2164	2070	0	0	0	0	0	0	0
2070	2164	2060	2050	0	0	0	0	0	0
2090	2290	2240	0	0	0	0	0	0	0
2100	2231	2110	0	0	0	0	0	0	0
2110	2100	2280	0	0	0	0	0	0	0
2122	2020	2170	2050	2164	2150	2261	0	0	0
2130	2201	2280	0	0	0	0	0	0	0
2150	2122	2164	0	0	0	0	0	0	0
2164	2060	2070	2050	2122	2010	0	0	0	0
2170	2290	2240	2261	2020	2050	2122	0	0	0
2180	2270	2290	2188	0	0	0	0	0	0
2185	2188	2290	0	0	0	0	0	0	0
2188	2185	2290	2180	0	0	0	0	0	0
2201	2280	2130	0	0	0	0	0	0	0
2220	2231	2280	0	0	0	0	0	0	0
2231	2261	2100	2220	2110	2280	0	0	0	0
2240	2290	2090	2170	2261	0	0	0	0	0
2261	2240	2170	2020	2231	2122	0	0	0	0
2270	2290	2050	2180	0	0	0	0	0	0
2280	2220	2201	2231	2130	0	0	0	0	0
2290	2185	2188	2270	2050	2170	2240	2090	2180	0

G. References

¹National Center for Health Statistics. *Public Use Data Tape Documentation, Mortality Detail, 1992*. Rockland, MD: National Center for Health Statistics, 1992.

²Wallman KK, Hodgdon J. Race and ethnic standards for federal statistics and administrative reporting. *Statistical Reporter*, July 1977 (no. 77-10):450-454.

C Resources

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A. Federal Government Agencies

Office of the Associate Director for Minority Health
Centers for Disease Control and Prevention
1600 Clifton Road, Atlanta, GA 30033
Phone: 404-639-7210
Website: <http://www.cdc.gov/od/admh/>

The mission of the Office of the Associate Director for Minority Health is to improve the health of African-American, Pacific Islander, Hispanic American, Native American and Alaska Native citizens, and, where appropriate, similar ethnic/racial subgroups both in and out of the United States.

Office of Women's Health
Centers for Disease Control and Prevention
1600 Clifton Road, MS: D-51, Atlanta, GA 30033
Phone: 404-639-7230 Fax: 404-639-7331
Website: <http://www.cdc.gov/od/owh>

The Office of Women's Health is dedicated to in-depth research, dissemination of information and public policy regarding women's health.

Office of Minority Health
Division of Information and Education
Rockwall II Building, Suite 1000
5600 Fishers Lane, Rockville, MD 20857
Phone: 301-443-5224 Fax: 301-443-8280
Website: <http://www.omhrc.gov>

The Office of Minority Health works to improve collection and analyses of data on the health of racial and ethnic minority populations, and it monitors efforts to achieve Healthy People 2000 goals for minority health.

The Office of Minority Health Resource Center
Division of Information and Education
Rockwall II Building, Suite 1000
5600 Fishers Lane, Rockville, MD 20857
Phone: 1-800-444-6472
Website: <http://www.info@omhrc.gov>

The Office of Minority Health Resource Center was established to assist in the exchange of information and analysis of minority health issues. The center collects and distributes information on a wide variety of health topics and facilitates the exchange of information on minority health issues.

Office of Research on Women's Health
National Institutes of Health
Building 1, Room 201, Bethesda, MD 20892
Website: <http://www4.od.nih.gov/orwh/index.html>

The goal of the Office of Research on Women's Health is to ensure that research conducted and supported by the National Institutes of Health addresses issues of women's health, and that there is appropriate inclusion of women in clinical research, especially in clinical trials.

National Heart, Lung, and Blood Institute
National Institutes of Health, Building 31
31 Center Drive, Bethesda, Maryland 20892
Website: <http://www.nhlbi.nih.gov/nhlbi/nhlbi.htm>

The National Heart, Lung, and Blood Institute is a national program dedicated to research related to the causes, prevention, diagnosis, and treatment of heart, blood vessel, lung, and blood diseases; and sleep disorders.

Indian Health Service
Chief, Special Initiative Branch
Division of Legislation and Regulations
Parklawn Building, Room 6-05
5600 Fishers Lane, Rockville, MD 20857
Phone: 301-443-1083 Fax: 301-443-4794
Website: <http://www.ihs.gov>

The Indian Health Service (IHS) is an agency within the US Department of Health and Human Services that is responsible for providing federal health services to American Indians and Alaska Natives. The IHS is the principal federal health care provider and health advocate for Indian people, and its goal is to assure that comprehensive, culturally acceptable personal and public health services are available and accessible to American Indian and Alaska Native people.

National Institutes of Health
Associate Director, Office of Research on Minority Health
National Institutes of Health
Building 1, Room 258
1 Center Drive, MSC 0164, Bethesda, MD 20892-0164
Phone: 301-402-1366 Fax: 301-402-7040

The Office of Research on Minority Health (ORMH) was founded in 1999 by the National Institutes of Health (NIH) in order to help solve research questions that result from the disparity of health status among Americans. The ORMH mission is to support and promote biomedical research aimed at improving the health status of minority Americans across the lifespan and programs aimed at expanding the participation of underrepresented minorities in all aspects of biomedical and behavioral research.

Agency for Healthcare Research and Quality
Minority Health Coordinator
Center for Cost and Financing Studies
2101 East Jefferson Street, Suite 500, Rockville, MD 20852
Phone: 301-594-1406, ext. 1477 Fax: 304-594-2157
Website: <http://www.ahrq.gov>

The Agency for Healthcare Research and Quality (AHRQ) was established in 1989 as the Agency for Health Care Policy and Research. Re-authorizing legislation passed in November 1999 established AHRQ as the lead Federal agency on quality research. AHRQ, part of the U.S. Department of Health and Human Services, is the lead agency charged with supporting research designed to improve the quality of health care, reduce its cost, and broaden access to essential services. AHRQ's broad programs of research bring practical, science-based information to medical practitioners and to consumers and other health care purchasers.

B. State and Territorial Agencies

*Cardiovascular Health Council of the
Association of State and Territorial Chronic Disease
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C. Minority Health Organizations

Minority Health Professions Foundation
3 Executive Drive, NE, Suite 100, Atlanta, GA 30329
Phone: 404-634-1993 Fax: 404-634-1903
Website: <http://www.minorityhealth.org>

The Minority Health Professions Foundation is a non-profit educational, scientific and charitable organization that provides support for professional education, research and community service that promote optimum health among poor and minority people.

National Association for the Advancement of Colored People
4805 Mt. Hope Drive, Baltimore, MD 21215
Phone: 410-358-8900 Fax: 410-486-9255
Website: <http://www.naacp.org>

The National Association for the Advancement of Colored People (NAACP) is the oldest, largest, and strongest civil rights organization in the United States. The principal objective of the NAACP is to ensure the political, educational, social and economic equality of minority group citizens of the United States. The NAACP is committed to non-violence and relies upon the press, the petition, and the ballot to fulfill its mission.

D. African American Health Organizations

Association of Black Cardiologists
Peachtree Center, South Tower
225 Peachtree Street NE, Suite 1420, Atlanta, GA 30303
Phone: 404-582-8777 Fax: 404-582-8778
Website: <http://www.abccardio.org>

The Association of Black Cardiologists' mission is to unite health providers, particularly those who provide cardiovascular care to African-Americans, as a group to promote primary prevention, quality of life and culturally sensitive clinical management of cardiovascular diseases.

Association of Black Psychologists
P.O. Box 55999, Washington, DC 20040-5999
Phone: 202-722-0808 Fax: 202-722-5941
Website: <http://www.abpsi.org>

The Association of Black Psychologists is an independent not-for-profit organization of over 1400 members. The goal of the ABPSI is to have a positive impact upon the mental health of the national Black community by means of planning, programs, services, training, and advocacy.

International Society on Hypertension in Blacks
2085 Manchester St., NE, Atlanta, GA 30324
Phone: 404-875-6323 Fax: 404-875-6334
Website: <http://www.ishib.org>

The International Society on Hypertension in Blacks (ISHIB) is a not-for-profit professional, medical, membership society devoted to improving the health and life expectancy of ethnic populations. ISHIB was founded in 1986 to respond to the problem of high blood pressure among ethnic groups. Its organizational scope includes diabetes, stroke, lipid disorders, renal disease and other related cardiovascular diseases.

National Black Nurses Association
1511 K Street, NW, Suite 415, Washington, DC 20005
Phone: 202-393-6870 Fax: 202-347-3808
Website: <http://www.nbna.org>

The National Black Nurses Association was founded to develop a better health care system for black people, where black nurses and other nurses of color played a prominent role in the system. The NBNA encourages African American nurses to take the lead in order to make a difference in the quality of life in communities of color.

National Association of Black Social Workers
8436 W. McNichols Street, Detroit, MI 48221
Phone: 313-862-6700 Fax: 313-862-6998

The National Association of Black Social Workers was formed in response to issues related to providing human services in the Black community, educating social workers for effective service in the Black community, and providing opportunities for participation of Black social workers in the social welfare arena.

National Medical Association
1012 10th Street, NW, Washington, DC 20001
Phone: 202-347-1895 Fax: 202-842-3293
Website: <http://www.nmanet.org/index.asp>

The National Medical Association is committed to preventing the diseases, disabilities and adverse health conditions that disproportionately or differentially impact African American and underserved populations, supporting efforts that improve the quality and availability of health care to poor and underserved populations, and increasing the representation and contribution of African Americans in medicine.

E. American Indian and Alaska Native Health Organizations

Native American Women's
Health Education Resource Center
P.O. Box 572, Lake Andes, SD 57356-0572
Phone: 605-487-7072
Website: <http://www.nativeshop.org/nawherc.html>

The Native American Community Board (NACB) was formed in 1985 by a group of Native Americans living on or near the Yankton Sioux Reservation in South Dakota to address pertinent issues of health, education, land and water rights, and economic development of Native American people. The NACB operates the Native American Women's Health Education Resource Center.

National Indian Health Board
1385 S. Colorado Blvd., Suite A707, Denver, CO 80222
Phone: 303-759-3075 Fax: 303-759-3674
Website: <http://www.nihb.org>

The National Indian Health Board (NIHB) represents Tribal Governments that operate their own health care delivery systems through contracting and compacting, as well as those that receive health care directly from the Indian Health Service. The National Indian Health Board is a non-profit organization that conducts research, policy analysis, program assessment and development, national and regional meeting planning, project management, and training and technical assistance programs. These services are provided to Tribes, Area Health Boards, Tribal organizations, Federal agencies, and private foundations.

Association of American Indian Physicians
1235 Sovereign Row, Suite C-9
Oklahoma City, Oklahoma 73108
Phone: 405-946-7072 Fax: 405-946-7651
Website: <http://www.aaip@ionet.net>

The Association of American Indian Physicians was founded to pursue excellence in Native American health care by promoting education in the medical disciplines, honoring traditional healing practices and restoring the balance of mind, body, and spirit.

Association of Native American Medical Students
1235 Sovereign Row, C-9, Oklahoma City, OK 73108
Phone: 405-946-7072
Website: <http://www.aaip.com/student/anams.html>

The Association of Native American Medical Students was founded to provide support and resource network for all Native Americans currently enrolled in the various allied health professions schools, to increase the number of Native American students in medicine and other health professions, and to promote its exposure and recognition on a national level throughout the medical community.

Indians into Medicine
University of North Dakota
School of Medicine and Health Science
P.O. Box 9037, Grand Forks, ND 58202-9037
Phone: 701-777-3037 Fax: 701-777-3277

Indians into Medicine addresses three major problem areas: (1) too few health professionals in American Indian communities, (2) too few American Indian health professionals, and (3) the substandard level of health and health care in American Indian communities.

F. Asian and Pacific Islander Health Organizations

National Asian Women's Health Organization
250 Montgomery Street, Suite 410, San Francisco, CA 94104
Phone: 415-989-9747
Website: <http://www.nawho.org>

The National Asian Women's Health Organization is dedicated to public health advocacy for Asian Americans and empowerment of Asian American women beyond accessing existing opportunities. Programs focus on providing research data and changing public policy to address the reproductive health status of under-served Asian communities.

The Asian and Pacific Islander American Health Forum
942 Market Street, Suite 200, San Francisco, CA 94102
Phone: 415-954-9959

The Asian and Pacific Islander American Health Forum is a national advocacy organization dedicated to promoting policy, program and research efforts for the improvement of health status of all Asian and Pacific Islander Americans.

The Association of Asian Pacific Islander Community Health Organizations
1440 Broadway, Suite 510, Oakland CA 94612
Website: <http://www.aapcho.org>

The Association of Asian Pacific Community Health Organizations is a national association representing community health organizations dedicated to improving the health status of Asians and Pacific Islanders in the United States and its territories, especially the medically under-served.

Chinese American Medical Society
281 Edgewood Avenue, Teaneck, NJ 07666
Phone: 201-833-1506 Fax: 201-833-8252
Website: <http://www.camsociety.org>

The Chinese American Medical Society is dedicated to promoting the scientific association of medical professionals of Chinese descent, to advancing Chinese medical knowledge and scientific research, to establishing scholarships and endowments to medical and dental students, and to providing endowments to medical schools and hospitals of good standing.

G. Hispanic Health Organizations

National Coalition of Hispanic
Health and Human Services Organizations
1501 Sixteenth Street, NW, Washington, DC 20036
Phone: 202-387-5000 Fax: 202-797-4353
E-mail: info@cossmho.org

The National Coalition of Hispanic Health and Human Services Organizations is dedicated to connecting communities and creating change to improve the health and well-being of Hispanics in the United States, through consumer education and outreach, training programs, policy analysis, development and dissemination, and advocacy.

The National Council of La Raza
1111 19th, NW Suite 1000, Washington, DC 20036
Website: <http://www.nclr.org/>

The National Council of La Raza, with over 200 formal affiliates who together serve 37 states, Puerto Rico, and the District of Columbia, was established to reduce poverty and discrimination, and improve life opportunities for Hispanic Americans.

National Association of Hispanic Nurses
1501 16th Street, NW, Washington, DC 20006
Phone: 202-387-2477 Fax: 202-483-7183
Website: <http://www.incacorp.com/nahn>

The National Association of Hispanic Nurses is the only national organization representing Hispanic registered nurses in the United States. Its goal is to increase the leadership development of Hispanic nurses and to improve the quality of health of Latino communities.

National Hispanic Medical Association
1700 17th Street, NW, Suite 405, Washington, DC 20009
Phone: 202-265-4297 Fax: 202-234-5468
Website: <http://home.earthlink.net/~nhma/>

The National Hispanic Medical Association was organized to address the interests and concerns of 26,000 licensed physicians and 1,800 full-time Hispanic medical faculty dedicated to strengthening health service delivery to Hispanic communities across the nation.

Interamerican College of Physicians and Surgeons
915 Broadway, Suite 1105, New York, NY 10010-7108
Phone: 212-777-3642 Fax: 202-505-7984
Website: <http://www.icps.org>

The Interamerican College of Physicians and Surgeons was founded to improve the health of the Hispanic community, reduce the incidence of preventable diseases, improve educational and leadership opportunities for Hispanic physicians, and encourage Hispanic youths to pursue careers in the healthcare field.

H. Women's Health Organizations

National Women's Health Network
514 10th Street NW, Suite 400
Washington, DC 20004
Phone: 202-347-1140

The National Women's Health Network serves two purposes. One arm of its organization is a policy-making and advocacy group for women's health issues. The other component is a clearinghouse and research service for women across the United States.

Jacob's Institute of Women's Health
409 12th Street, SW, Washington, DC 20024-2188
Phone: 202-863-4990
Website: <http://www.jiwh.org/index.htm>

The Jacobs Institute of Women's Health is a not-for-profit organization dedicated to advancing knowledge and practice in the field of women's health. Members of the Jacobs Institute are a multidisciplinary group of health care providers, researchers, policy makers and advocates.

National Women's Health Resource Center
120 Albany Street, Suite 820, New Brunswick, NJ 08901
Phone: 877-986-9472 Fax: 732-828-8575
Website: <http://www.healthywomen.org>

The National Women's Health Resource Center is a national clearinghouse for information and resources about women's health. Its primary goal is to educate healthcare consumers and empower them to make intelligent decisions by providing easy-to-understand and easy-to-reach information and services.

American Medical Women's Association
801 N. Fairfax Street, Suite 400, Alexandria, VA 22314
Phone: 703-838-0500 Fax: 703-549-3864
E-mail: info@amwa-doc.org

The American Medical Women's Association is a national organization of women physicians and medical students, dedicated to promoting women's health, improving the professional development and personal well-being of its members and increasing the influence of women in all aspects of the medical profession.

I. Heart Disease Organizations

American Heart Association, National Center
7272 Greenville Avenue, Dallas, TX 75231
Website: <http://www.americanheart.org/>

The American Heart Association is a not-for-profit, voluntary health organization funded by private contributions. Its mission is to reduce disability and death from cardiovascular diseases and stroke.

InterAmerican Heart Foundation
American Heart Association, National Center
7272 Greenville Avenue, Dallas, TX 75231
Phone: 214-706-1218
Fax: 214-373-0268 or 972-562-3807
Website: <http://www.iahf.org>

The goals of the InterAmerican Heart Foundation are to promote an environment throughout North, Central and South America and the Caribbean conducive to the prevention of heart diseases and stroke; to facilitate the development and growth of heart foundations; and to foster partnerships between health professionals and other sectors of society including business and government for the accomplishment of its mission.

J. Patient Resources

National Heart, Lung, and Blood Institute
National Institutes of Health, Building 31
31 Center Drive, Bethesda, Maryland 20892
Website: <http://www.nhlbi.nih.gov/nhlbi/nhlbi.htm>

The National Heart, Lung, and Blood Institute can supply a wealth of information regarding heart, blood and lung diseases for patients. Resources are available on the internet as well as via telephone and direct mail.

American Heart Association, National Center
7272 Greenville Avenue, Dallas, TX 75231
Website: <http://www.americanheart.org/>

The American Heart Association offers resources for heart disease patients regarding health, fitness and dietary guidelines. Information may be obtained via internet, telephone or direct mail.

Centers for Disease Control and Prevention
1600 Clifton Road, Atlanta, GA 30033
Phone: 404-639-7000
Website: <http://www.cdc.gov>

The Centers for Disease Control and Prevention (CDC) is a government agency dedicated to the promotion of health and quality of life by preventing and controlling disease, injury, and disability. The CDC website provides information about a variety of health topics including women's, cardiovascular, and minority health.

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